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ABSTRACT

This research report examines 10-year results of the Illinois Valedictorian Project, a program that has followed 81 high-achieving high school valedictorians for 10 years following their high school graduation. It describes the study's sampling and study methods; presents the findings from the first 5 years and the status of the study group at 10-year followup; and considers academic, attitude, and career outcomes of the group as a whole and various subgroups. Among the report's findings was that the valedictorians were highly successful in their undergraduate study earning a mean grade point average of 3.6 on a 4-point scale and earning many scholastic honors. Of those completing graduate study, more than half were employed in science, math, engineering, and business careers. Other findings revealed that only one student of color completed graduate school, only women entered medical school, men outnumbered women in law school, and female valedictorians pursued PhD programs in a wider variety of fields than did male valedictorians. Black and Hispanic valedictorians achieved lower levels of education than the study group as a whole. About a quarter of the valedictorians are now at top professional levels for their age. The study shows a strong connection between top academic achievement in high school and similar achievement in college. Appendices provide details of the project's research methodology. Contains 29 references. A separately-published 4-page "Executive Summary" is appended. (GLR)

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Academic Achievement—
A View from the Top
The Illinois Valedictorian Project

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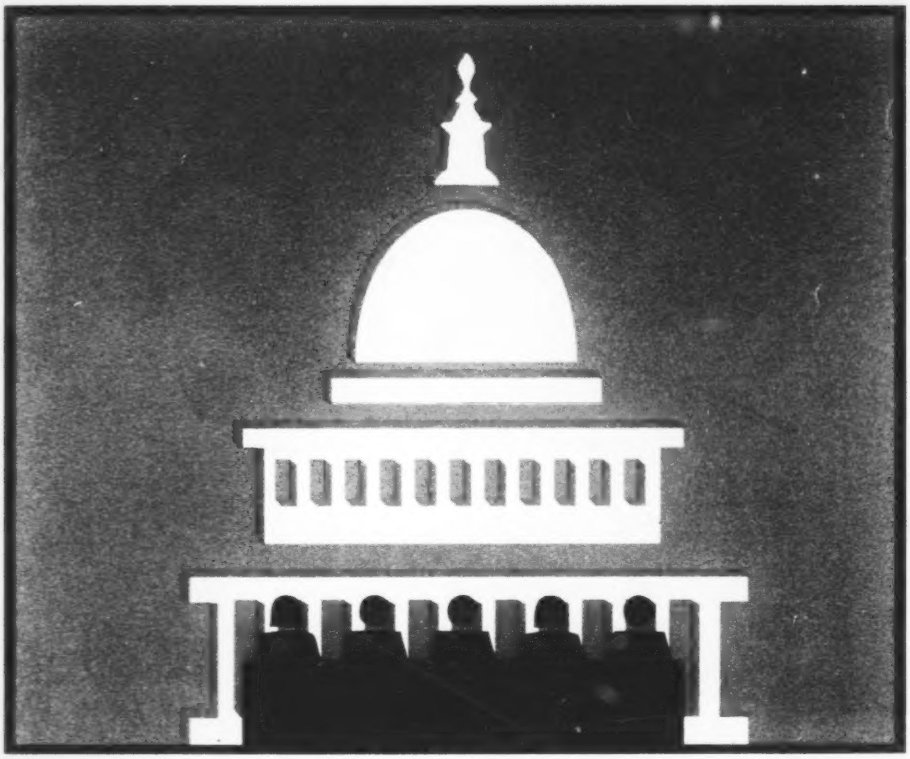

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Table of Contents

Study Overview 1

Background of the Illinois Valedictorian Project 2

The Sample and Method 3
    Sampling Procedure 3
    The Participants 4
        Table 1—Parents' Education 5
    Commencement Exercises 5
    Data Collection: Interviews and Quantitative Data Sources 6

Findings from the First Five Years 6
    Precollege Characteristics 6
    College Choice 9
    Academic Majors 9
        Table 2—College Majors 10
    Undergraduate Academic Achievement 10

Status of Study Group at Ten-Year Follow-Up 10
    Table 3—Educational Attainment of Former Valedictorians 11
    Table 4—Current Occupations of Former Valedictorians 13

Female Valedictorians 14
    Table 5—Self-Report of Intelligence Compared to Peers 15
    Table 6—Valedictorians' Anticipation of the Difficulty of Life as the Opposite Sex 17
    Table 7—Career Participation Plans 18
    Table 8—Female Valedictorians: Traditionality of College Major by Participation Plans 19
    Postcollege Years 21
    Case Study 23
        Sherri 23
    Summary 25

Male Valedictorians 26
    Current Status of Male Study Group 26
    Early Adult Careers 27
    Factors Related to Male Vocational Patterns 31
    Case Study 33
        Len 33
    Summary 36

AHANA Valedictorians 36
    Asian-American Valedictorians 37

- African-American Valedictorians 37
- Hispanic Valedictorians 38
- Post-High School Experiences 38
- Money 39
- Family 40
- Undergraduate Climate 42
- Achievement Factors 43
- Case Study 45
  - Eric 46
- Summary 48

Relative Achievement of Male, Female, and AHANA Valedictorians 48
- Tacit Knowledge 49
- Implications for Education 51

Recommendations 53
- Secondary School Educators 53
- Postsecondary Administrators and Faculty 54
- Employers 54

Conclusion 54

Appendix—Methodology of the Illinois Valedictorian Project 56
- Sample 56
- Method 57
  - Qualitative Data Sources 57
  - Quantitative Data Sources 57
  - Discriminant Analyses 58
    - Table 9-Discriminant Analysis for Two Female Vocational Groups 60
    - Table 10—Discriminant Analysis for Two Male Vocational Groups 61

References 62

Academic Achievement—A View from the Top
The Illinois Valedictorian Project[1]

What are the consequences of being a high school valedictorian? What does it mean to win the academic race: to be the salutatorian or at the top of a highly competitive, academically oriented high school? Are such achievers proud of their laurels? Does stellar academic performance as a high school student translate into high achievement in postsecondary education? More important, what does scholastic achievement have to do with success outside of academics?

Such questions guide the longitudinal research that seeks to investigate the relationship between high school academic achievement and undergraduate and career attainment. Aside from a yearly flurry of newspaper profiles and retrospective anecdotes, little is known about what "really happens" to high school valedictorians. No systematic study of valedictorians appears in the education or psychology literature. We know almost nothing about the meaning, consequences, and importance of the academic convention that confers the titles of valedictorian and salutatorian on select high school students.

Study Overview

Schools in America share at least one common belief: high academic achievement is a good thing. How to get it, what price to pay for it, and what to do with it are issues that underlie and override the consensus about the desirability of students' doing well in their academic studies. The Illinois Valedictorian Project has completed the first decade of a 15-year longitudinal study of high school valedictorians and salutatorians. (The students will be referred to as "valedictorians" for the sake of conciseness.) The Project follows the academic and nonacademic lives of top high school academic achievers in order to understand academic success—its antecedents, its costs, its rewards, and its relationship to career and personal life adaptation.

The Project began with the identification of 82 valedictorians and salutatorians who graduated in 1981 from high schools throughout the state of Illinois. Researchers attended each of the graduation exercises of the participants, met with them, and conducted five to six extended interviews with each of the study members. Questionnaires, telephone conversations, letters, and other information sources supplement the semi-structured interviews.

The ten-year longitudinal data base of interview and survey material forms the basis for the current investigation of the early adult lives of academically talented students. Following an overview of the methodology of the Illinois Valedictorian Project and a summary of the major findings from the first decade, separate sections of this report will consider the achievement patterns of male, female, and AHANA[2] former high school valedictorians.

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[1] Terry Denny, Professor Emeritus, University of Illinois at Urbana-Champaign, began the Illinois Valedictorian Project in 1981. The author gratefully acknowledges Dr. Denny's leadership during the first ten years of the study and his continuing participation in the ongoing longitudinal research.

Background of the Illinois Valedictorian Project

The common achievement setting of childhood and adolescence is formal schooling, and the measurement of school achievement is grades. The top student in a high school is most often identified as the student with the best grades, and the long-standing practice of naming a valedictorian as the highest ranked student acknowledges the importance that schools attach to grades. Surprisingly, no systematic study of high school valedictorians appears in the social sciences literature. Countless anecdotes and yearly newspaper profiles compose most of what is known about valedictorians. Studies in the gifted literature, such as Terman's studies of genius (Terman, 1959) and Project Talent (Card, Steel, & Abeles, 1980), include a few valedictorians. Commonly, however, researchers of the gifted identify talented individuals based on tested measures of ability and creativity or on eminent or creative performance. And even gifted individuals identified on the basis of ability and creativity rarely are studied longitudinally to determine their achievement paths.

Outside of research and theory on the gifted, a small body of empirical research investigates the relationship between grades and such adult attainments as employment level and income (Baird, 1985; Cohen, 1984; Pascarella & Smart, 1990). This literature finds a small, positive relationship between academic success and adult career measures. Academic performance explains very little of the variation in adult career outcomes, however, and grades appear to influence career attainment only indirectly. Some indications are that scholastic performance does make a difference for high academic achievers in general (Astin, 1977) and for women with high IQs (Sears & Barbee, 1977). Other studies find that success—especially life success, but career achievement as well—correlates more nearly to nonacademic factors such as extracurricular activities (Munday & Davis, 1974) or mature coping mechanisms (Vaillant, 1977).

Cross-sectional, quantitative analyses of grades and adult outcomes fail to illuminate the conditions under which high grade earners sustain their achievement or the attributes that might affect both academic and nonacademic performance. Of particular difficulty in this literature is the problem of separating individual characteristics, such as motivation and ability, from the increased access to opportunities that results from high academic performance.

The Illinois Valedictorian Project echoes other research in finding that grades have an indirect effect on adult career patterns. The theoretical concept of practical knowledge offers one possible explanation for the wide variety of adult outcomes among highly talented students and provides a theoretical framework for the current study on gifted women and AHANA students. In their Triarchic Theory of Intelligence, Robert Sternberg and his colleagues identify "tacit knowledge" as an important component of practical intelligence (Sternberg, 1985; Sternberg & Wagner, 1986). Sternberg defines tacit knowledge as career-related understanding that is rarely verbalized and is not explicitly taught. Like practical intelligence in general, tacit knowledge is necessary to function highly in achievement tasks. Knowing how to build a career, for example, is a form of tacit knowledge that is independent of academic ability but is necessary in order to capitalize on scholastic talent. Practical, career-building knowledge is largely absent from the formal secondary and undergraduate curricula. In comparison with the other major factors of Sternberg's triarchic theory, little research has been conducted on practical knowledge. Studies have found, however, that tacit knowledge relates to career success in academic psychologists and to job level among business managers (Wagner & Sternberg, 1985).

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[2] "AHANA" is an acronym that stands for "African-American, Hispanic, Asian, and Native American." In use in several institutions of higher education for more than ten years, the term highlights the diversity among people of color and avoids the inaccurate and pejorative connotations of the term "minority."

Gifted learners are sometimes defined by their ability to make wise and personally rewarding adaptations to world demands (Sellin & Birch, 1981). How the valedictorians cope with these demands over time and, indeed, whether the research on talented and gifted populations applies appropriately to a group that achieves *within* the "system" are fascinating central questions to our study.

The Sample and Method

The study members are 46 women and 35 men who were the best grade earners at rural, town, city, and suburban public and private high schools in Illinois. The educational backgrounds and occupations of the students' parents vary considerably. The predominantly white group includes five African-American and three Hispanic students as well as one Asian-American student.

Sampling Procedure

The sample was drawn from a list of 270 Illinois high schools that publicly recognized valedictorians at commencement. The list of schools was obtained in response to letters of inquiry to all Illinois high school principals, half of whom responded. The scheduled times of the graduation exercises had a direct bearing on the sample, since the study called for a researcher to attend the commencement ceremonies of each of the study participants.

Within the logistical constraints of attendance at graduation, high schools were chosen to include large and small schools; city, rural, and suburban schools; parochial and public schools; and schools with an African-American and Hispanic majority. Whenever a conflict arose wherein more than one school was scheduled for a commencement ceremony at the same time, schools were chosen to provide demographic characteristics underrepresented in the study. In this manner, 33 schools were selected. The schools include 6 Catholic, 1 Lutheran, 2 nondenominational private, and 24 public high schools. Study members graduated at the top of classes that ranged from 25 students in farming communities to 650 students in suburban and city high schools. They achieved top high school honors in inner-city Chicago, in downstate cities, and in university towns. One student delivered her valedictory speech in Spanish.

The sample, in short, was designed to include students who were joined by a common criterion of publicly recognized academic success but who represented a wide range of possible settings for that success. The nonprobability sample, therefore, does not represent the population distribution of Illinois high school students. Although the geographical distribution of the 33 schools roughly corresponds to the concentration of the state population in the Chicago area, the sample over-represents Illinois students from high schools outside of Chicago, from private high schools, and from predominantly African-American and Hispanic institutions.

After attending the commencement exercises, researchers sent letters requesting participation to 90 students. Eighty-three replied, one of whom could not be convinced to join the study. Another was killed in an automobile accident soon after the initial interview. Thus, the current 81 students were selected. Ten years after they graduated, all 81 students remain active in the study.

The Participants

In addition to 51 valedictorians, study participants include 20 salutatorians and 9 top honor students. (Salutatorians were included on the urging of members of a pilot study of high school valedictorians. Nine students who were neither valedictorians nor salutatorians also were included on the advice of school administrators who identified these students as the "real" top students at their high schools. Continued inclusion of these students has rested on analyses that show them to be similar to the rest of the group in ability, background characteristics, and college academic performance.

Study members are principally white (89%) and born in the U.S. (85%). Five valedictorians are African-American, three are Mexican-American, and one is Chinese-American. Twelve percent of the group have a parent or parents who are immigrants. Some members of the study group speak English as a second language; other native speakers of English speak a second language in the home. Over 60 percent came from urban (34%) and suburban (29%) areas, while 24 percent grew up in towns and 13 percent in rural settings. Most (72%) attended public high schools, 21 percent attended Catholic or Lutheran schools, and seven percent were at the top of private, nonreligiously affiliated high schools. The parents of the valedictorians work in diverse occupations, from unskilled laborers to farmers, small business owners, and professionals. Most of the valedictorians grew up in two-parent families. Only four students were raised in single-parent households due to divorce (2) or death of a parent (2). Parents were educated to the sixth grade in some instances, beyond the Ph.D. level in others. A slight majority of the students' fathers were college graduates (59%), as were 29 percent of their mothers (Table 1).

Table 1
Parents' Education (1981)

Highest Level Completed	Father's Education (%)	Mother's Education (%)
Less than high school	5	7
High school	22	34
Some college, no degree	9	14
Two-year or RN degree	5	14
Bachelor's degree	38	24
Master's degree	4	5
Ph.D., M.D., J.D.	17	1
Current student	0	1

A dimension that we found to be important in the expressed and implied value schemes of a large majority of this group is a belief in God. In their interviews, questionnaire responses, and personal behavior, almost two-fifths of our group (39%) have steadfastly given evidence of the centrality of God in their lives. An additional 27 percent consider God to be a solid factor in their lives. Still another 24 percent acknowledge God to be a factor and 11 percent do not consider God to be a factor in their lives. How this apparently robust proportion of solid believers (66%) compares with the national average for academically talented young men and women is unknown. Believers include Catholic and Protestant, Baptist, Nazarene, Mormon, Jewish, and others.

Commencement Exercises

The sample was limited to high schools that "anointed" a valedictorian publicly with the traditional commencement address. A researcher's witnessing the moment of public recognition as valedictorian was, therefore, an important initiation to the Illinois Valedictorian Project. A Project researcher attended each of the 33 high school commencement ceremonies to get some sense of that significant day in the lives of the students as well as to introduce the study to these students. Each valedictorian provided the Project with a copy of the valedictorian address. With a few notable exceptions, these speeches were uninspired accounts of high school experiences, gratitude to adults, and vague calls to future leadership. In the first year of the study, researchers used the addresses and the field notes from commencement to initiate discussion about the background, meaning, and experience of being a valedictorian.

Data Collection: Interviews and Quantitative Data Sources

The valedictorians participated in five to six semi-structured interviews, including annual interviews during the first four years after high school graduation. In addition, questionnaire data were collected in 1981, 1984, 1985, 1988, and 1990. All 81 study members were interviewed in the tenth year of the Project. By 1991, the semi-structured interviews had yielded more than 7,000 pages of typed interview transcripts covering discussions of early scholastic and family experiences as well as ongoing personal, academic, and career experiences, perceptions, and achievement.

In the academic year following their high school graduation, the study members were interviewed in-depth about their high school and family experiences. Subsequent interviews have been at a more personal level, dwelling on emotional ups and downs, academics, the first "B," love and friendship, parental influences, career plans, and reflections on achievement. As the students left college, the focus of the interviews shifted to graduate school and early careers, as well as dating, marriage, and parenting. All of the interviews feature questions aimed at identifying the participants' need to achieve and the source(s) of that need, influential experiences related to their academic achievement, and a sense of their general attitudes toward themselves, their families, their lives, and the future. Several questions are repeated at each interview asking about the students' ultimate goals, their struggles, and the meaning that they give to having been valedictorians or salutatorians. Interviewers also read excerpts from past interviews to solicit current reactions of study members to earlier thoughts, feelings, and aspirations.

During the first year of the study, the Project collected survey information about student lifestyles and values that replicated items from a national probability sample of more than 16,000 1981 high school seniors. The same questions were posed to the study members in 1990. Researchers have administered other normed survey instruments over the years that have facilitated the comparison of the high achieving study group with national samples of heterogeneous and gifted age peers. In 1985, students completed instruments measuring gender role expectations and achievement motivation. (Personal Attributes Questionnaire: Spence, Helmreich, & Stapp (1974): Work and Family Orientation Questionnaire, Spence & Helmreich (1983)). Finally, study participants have completed Project-designed surveys regarding educational and employment experiences, and personal and occupational values.

Findings from the First Five Years

Precollege Characteristics

Participants in the Illinois Valedictorian Project identified themselves as top students long before high school. Half of the valedictorians considered themselves high academic achievers by the 5th grade, 75 percent by the 8th grade. Thirteen study participants were National Merit Scholars, with an additional six being finalists or semi-finalists (totalling 36 percent of those who took the PSAT). The group's mean ACT college entrance examination score was 28 (95th percentile). ACT test scores ranged from 18 to 33, with six students earning scores at or near the national mean for college-bound high school students (20).

As they left high school, male and female valedictorians expressed basic insecurities about their abilities. A male valedictorian said: "I've never thought myself intelligent. I've always thought myself very stupid." A female honor roll student at an elite institution told researchers: "I fear flunking out. I always fear that." Many students agreed with the study member who said: "I'm not the smartest student in my high school. I just know how to get good grades."

In contrast to Bloom's (1985) finding that talent was developed by individualized instruction outside the school, high academic achievers excelled in classroom group learning within school. In the first year of the study, it became apparent that the conception of the high school valedictorian as a socially backward, studious grind was a myth. Study members were high school cheerleaders, football stars, and class officers. They played in school bands and wrote for school newspapers. Unlike Bloom's talented youth, who subordinated school to talent development, these academic achievers performed within the system of schooling, and for most school was at the center of their lives. The valedictorians were not extraordinarily dedicated intellectuals, nor did they escape the materialism and vocationalism of their cohort (Levine, 1980). As they left high school, the valedictorians exhibited a low incidence of idealism and a high priority on materialism. For most, making a contribution to society and working to correct social and economic inequalities were not important goals. Instead, the majority of the valedictorians picture "the ultimate" as including children, houses, and financial security.

While many of these students were fascinated by their majors, most of the group placed great importance on preparing for high status, well-paying jobs. Their values and interests were similar to the general profile of high school students in the early 1980s (Astin, Green, & Korn, 1987). The study group was practical in its approach to school and career. One student told us: "I see college as a job. You know: I'm here for one purpose and that is to learn, study, and do the best I can. And my parents' job is to pay for it." This student picked her major, chemical engineering, by the starting salary for graduates. She is currently working in the field, but considering a switch into business. Another student said: "I have a very mercenary attitude in life. You have to be good in grade school to be good in high school, to get to go to college, to get a job, to make money." Almost all of the valedictorians were either content with the educational system of grading and ranking or unable to consider an alternative. The study group did contain variations of opinion, however. When asked to reflect on the practice of grading and ranking in high school, one young woman said: "I feel like you plug into the system and it spits you out at the end. You know, you just kind of play along. You have your role to play and you play out that role. I regret it. I resent having been through that. I felt that way at graduation, like it was just essentially a giant machine. You put in the person and they're turning out products." This student has graduated from divinity school and is working with AIDS patients. She has struggled throughout the decade with her personal faith and her purpose in the world.

The valedictorians varied in their expressed motivation to graduate as the top students in their classes. Some said they found themselves near the top of their classes without extending themselves fully. Others report studying all night or bringing a flashlight to study on the bus trip returning from athletic competitions. "I was the only student who *ever* did that!" Few former valedictorians reported receiving monetary or other material rewards for high academic achievement, although one woman recalled that the turning point in her academic achievement followed the promise that she would receive her own horse if her middle school grades improved. "I ended up with two horses!" Only one woman and one man reported a consistent ambition to be valedictorian. The female study member recalls asking her mother about the valedictorian she observed at age 11 at her brother's high school graduation. She was told that the valedictorian was "the number one graduating student. I have always made lists of my goals. So that day, I put on my list the goal to be high school valedictorian."

Such single-minded pursuit of the academic pinnacle was rare in the study, as was direct parental pressure to become valedictorian. Instead, valedictorians consistently reported a general family expectation to work hard and do their best. The study members' work ethic was strong. In a comparison of achievement motivation between the study group and national representative groups of college students, athletes, and professionals, the valedictorians outscored every other sample on motivation to work hard and keep busy. (Comparisons are based on results from the Work and Family Orientation questionnaire (Spence & Helmreich, 1983), an instrument that measures work, mastery, and competition motivation.)

The valedictorian group reported a high incidence of religious faith and practice, with about a third of the group indicating that religion was central to their lives. Several were fundamentalist Christians. The valedictorians were less likely than their age peers to have used alcohol and other drugs by the end of high school. (Comparisons are based on replication of a national survey of high school seniors from the class of 1981 (Johnston, Bachman, & O'Malley, 1981).)

This group of valedictorians, then, appears to have been motivated by a strong achievement and work ethic that was supported but not pushed by their families. Along with placing a high value on work, the top students evaded some of the distractions that compete with high school academics by avoiding drugs and alcohol and, in many cases, by centering their social activities around religious groups. Finally, the students were motivated by conventional values of their era—advancement within the "system" toward the goal of prestigious, well-paying careers. As they left high school, the valedictorians were pragmatic, vocationally oriented, and uncritical of the system of schooling, grades, and ranking. "I can't think of a better way" was a common response to interviewer queries about the practice of recognizing the top high school student on the basis of grades. Although the sample of academically talented seniors was developmentally average in its cognitive level and views of authority, it was diverse in its awareness and insight.

In summary, the valedictorians were well-rounded, "mainstream" students whose high school achievement resulted from supportive families and teachers, work motivation, avoidance of activities that compete with academics, and, of course, intellectual ability.

College Choice

All of the students chose to attend college following high school graduation and 93 percent earned the bachelors degree in the decade after high school. A large proportion (70%) completed their undergraduate collegiate studies in four years, a few (5%) finished in three years, and another group took five to nine years to complete an undergraduate degree. Six valedictorians have not completed bachelors degrees. One of the six is still an active undergraduate. Two of the six drop-outs are white females, one a Hispanic female, and one an African-American male. Individual reasons for leaving school included financial problems, pregnancy, early fatherhood, and dissatisfaction with career plans. None of the students left college because of academic difficulties.

Sixteen valedictorians attended colleges and other institutions with a religious affiliation. Some attended Notre Dame University, Augustana College, Olivet Nazarene, and Milligan (TN). Not surprisingly, others earned degrees at some of the nation's most prestigious universities: the University of Chicago, Princeton, Harvard, MIT, Stanford. A small group chose to attend highly selective liberal arts colleges, such as Oberlin and Swarthmore. About a dozen students attended the University of Illinois, the largest concentration of Project members at a single institution. No student attended a single-sex college.

About half (47%) attended public, four-year postsecondary institutions, a quarter (24%) attended private, nonsectarian institutions, and 21 percent attended religiously affiliated institutions. Fifty-one members (68%) earned degrees at in-state (Illinois) institutions, twenty-three (31%) went out of state, and one transferred to another state institution. The colleges that they attended were selective, with average ACT scores of 25.

Academic Majors

The valedictorians clustered in a few academic majors: business (24%), engineering (19%), and science (19%). Other study members majored in a variety of other fields, including humanities, fine arts, nursing, physical therapy, and social sciences. No valedictorian began college intending to be a teacher, although three women eventually switched their majors to science education. One male majored in vocational eduction, but he has never worked in the schools. The valedictorians generally remained in their initial colleges and academic majors, only three study members transferred to other institutions, and six women and three men changed their majors during college. Table 2 shows the academic majors of the 81 students. The stability of college and major choices in the study group in all likelihood results from the predominance of vocationally specific academic programs they entered as freshmen and, more important, from their continued academic attainment.

Table 2
College Majors

Undergraduate Major	Female (#)	%	Male (#)	%	Total (#)	%
Agriculture	2	4	0	-	2	2
Architecture	0	-	1	3	1	1
Art	1	2	0	-	1	1
Business	7	15	12	34	19	24
Communications	3	7	2	6	5	6
Education	3	7	1	3	4	5
Engineering	7	15	8	23	15	19
English/Creative Writing	1	2	1	3	2	2
Nursing/Physical Therapy	8	17	0	-	8	10
Science/Math	10	22	5	14	15	19
Social Science	4	9	5	14	9	11
TOTAL	46	100%	35	100%	81	100%

Undergraduate Academic Achievement

The study group excelled academically in their undergraduate years, earning a mean grade point average of 3.6 on a 4-point scale. As college students, the former high school valedictorians continued to earn scholastic honors. At least a dozen study members graduated Phi Beta Kappa and three were named the outstanding student of their graduating class. Six former valedictorians earned all As in college. Seventy-seven percent of the study group received one or more institutional academic honors during their college years. Forty-five percent were on deans' lists and most were nominated for membership in a wide array of academic honorary societies. Twenty-six percent received scholarships contingent upon high academic performance. The record is clear: The best predictor of academic success is a history of academic success.

Status of Study Group at Ten-Year Follow-Up

Twenty-six women and 16 men in the study were married or engaged to be married in 1991. The married or engaged valedictorians are 56 percent of the women and 46 percent of the men. One man and one woman study member are divorced. Nine female valedictorians (20%) have children or are currently expecting a child. Nine men (22%) are parents, including one salutatorian who has adopted his wife's three half-siblings.

The valedictorians now work and study around the country, although the group is centered in the midwest and in the greater Chicago area. Approximately 40 percent of the group currently lives in Chicago, with another 40 percent in downstate Illinois and neighboring midwestern states. Nineteen study members have settled outside of the midwest, although half of this "mobile" group live as temporary residents pursuing their own or their spouses' graduate study or military service.

The percentage of men and women in graduate school was relatively similar in 1988, with 20 percent of each group pursuing graduate degrees. By 1991, 50 percent of the female valedictorians had either completed graduate degrees or were actively engaged in graduate study (Table 3). Thirty-seven percent of the male study members have received graduate degrees or are current graduate students. Only one AHANA valedictorian has completed a graduate degree—an African-American female engineer who received an MBA. Four women and one man began graduate programs but are no longer active students.

Table 3
Educational Attainment of Former Valedictorians (1991)

Highest degree earned by 1991	Female (#)	%	Male (#)	%	Total (#)	%
No undergraduate degree	3	7	3	8	6	7
Undergraduate only	17	37	18	52	35	44
Left graduate study	4	9	1	3	5	6
Master's degree (MA/MS)	7	15	2	6	9	11
Master's degree/ business (MBA)	3	7	1	3	4	5
Law degree (JD)	1	2	5	14	6	7
Medical degree (MD)	3	7	1	3	4	5
Ph.D.	8	16	4	11	12	15
TOTAL	46	100%	35	100%	81	100%

Despite the higher percentage of female graduate degree holders, the valedictorians' graduate fields still show gender differences. Men have entered law school in greater numbers. Women outnumber men in medical school. Male Ph.D. students are studying math, science, and engineering. In addition to these fields, women Project members are studying humanities, agriculture, and education. Ten women have completed terminal master's degrees or are enrolled in terminal master's programs. In sharp contrast, only three men have completed terminal master's degree programs.

Male and female study members are participating in the male-dominated professions of science, math, business, engineering, and law (Table 4). Reflecting their college majors, 70 percent of the group are employed in science, math, engineering, and business careers. Six students are attorneys, four are physicians, three are teachers, and six women are nurses or physical therapists. Three women with preschool-aged children are currently rearing children full-time, and ten study members are employed in nonprofessional jobs such as clerical positions. (Nonprofessional jobs are defined as jobs not requiring a college degree.) Valedictorians also are employed in church work, farming, architecture, broadcasting, and art design.

Table 4
Current Occupations of Former Valedictorians (1991)

Occupation	Females (#)	Males (#)	Total (#)	%
Businessperson/ Accountant	7	12	19	23
Clerical worker/ Retail sales	7	2	9	11
Engineer/ Computer science	7	8	15	18
Not employed outside home	3	0	3	4
Lawyer	1	5	6	8
Ph.D. Scientist/ Mathematician*	5	3	8	10
Physical therapist/nurse	6	0	6	8
Physician	3	1	4	4
Precollege Teacher	3	0	3	4
Other**	4	4	8	10
TOTAL	46	35	81	100%

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*Includes Ph.D. chemist working in science writing.

**Women: religious studies student, church worker, retail display designer, exercise instructor.

Men: farmer, undergraduate student, architect, commercial video maker.

Although many female valedictorians are pursuing male-dominated career fields, the study group generally reflects the sex segregation of the labor force. Women only are employed in the female-dominated jobs of precollege teaching, nursing, physical therapy, and secretarial work. No men are currently working in the female-dominated professions, although two male valedictorians are beginning second undergraduate degrees in teacher training. The two men who completed undergraduate education degrees both are working in business. Three quarters of the study men are working in business and technical fields. Women are far more likely than men to be employed in nonprofessional positions. And only women are working full-time in childrearing and homemaking. These women remain interested in professional achievement, however. All of the women outside of the labor force intend to return at some point to paid employment outside of the home.

The valedictorian group is generally physically and psychologically healthy. Like any group of this size, however, they have struggled with a variety of life's difficulties. In addition to the two divorced students, a half dozen other study members have experienced marital difficulties of varying severity and duration. Four students have lost both parents in the past decade and three study members have been involved in serious automobile accidents. A group of students has experienced significant instances of depression, including two former valedictorians who dropped out of graduate school. The other nine students who dropped out of undergraduate programs and graduate school faced significant obstacles to their continued educational achievement. Two single women in the study had unplanned pregnancies. Several participants have experienced difficulties with substance abuse, including one valedictorian who has been hospitalized for alcoholism. Temporary unemployment, illness, financial hardship, and stress all have affected men and women in the valedictorian group through the last decade.

Female Valedictorians

In the second year of the study, two patterns emerged from the interview data that led researchers to focus on gender difference in career aspirations of the former valedictorians and salutatorians. First, the women in the study—but not the men—showed a sharp decline in their self-estimated intelligence between high school and their sophomore year in college (Table 5).

Table 5
Self-Report of Intelligence Compared to Peers

Intelligence self-estimate	1981 high school seniors		1983 college sophomores		1985 college seniors	
	Male %	Female %	Male %	Female %	Male %	Female %
Average	7	7	9	27	3	7
Slightly above average	23	28	19	27	16	23
Above average	47	44	50	42	56	70
Far above average	23	21	22	4	25	0

This lowering of women's estimates of their own intelligence occurred without diminution in college academic performance. As these women left college, their grade point averages were slightly higher than those of the men, and women were as successful as men in gaining academic honors, merit-based scholarships, and undergraduate research and teaching assistantships. The most dramatic drop in intellectual self-esteem occurred between the senior year of high school and the sophomore year of college. By the senior year of college, the picture had improved slightly, with only three women characterizing themselves as average in intelligence. There was still a significant difference favoring males' intellectual self-estimate, however. As they finished college, no woman said she was far above average in intelligence compared with her peers. To repeat, not a single woman headed for doctoral study, law, or medicine reported her intellectual ability as far above average four years after high school graduation. A quarter of the male valedictorians said that they were far above average in intelligence compared to their peers. Again, this lowering of women's estimates of their own intelligence occurred despite women's continued scholastic excellence.

A second trend that began during the sophomore year of college was a shift away from medical school aspirations by six of the women in the group. Of the six women who expressed early interest in medical school, one remained in science, two moved to psychology, two to education, and one to nursing. Two of the changes, to nursing and secondary education, were clearly motivated by relatively poor academic performance in required science courses; both women are among the only study members (six of them) who graduated from college with a grade point average below a B. The remaining four women who changed from pre-med into other majors, however, were top college students with undergraduate academic honors and one was on her way to graduation with all As as a chemistry major. In their interviews, these women discussed their concern with the effect that the demands of medical training and practice would have on future marriage and childrearing. None of the women were married or engaged when they began adjusting their career aspirations based on anticipated family roles. Here are some representative statements of former high school valedictorians as college sophomores:

> I'm interested in pre-med but not as much. I'm thinking more in terms that I do want to have a family and I want to have a normal family. I want to have a family where the woman's in the house more than a doctor would be able to be. Because with the doctor's hours not being regular and stuff and you can't be a half-time doctor. You can't be part-time. You've got to put your whole self into it and I don't know if I could do that and still put my whole self into my family. I don't think I could raise kids the way I want to. And it comes down to whether I want to choose between being a mother or being a doctor.
>
> There's a few things I know I want. I know I want to get married, I know I want to have kids. I know I want to have a career. I don't know how much weight I want to put on my career. I don't know how long I want to work. One thing that angers me is that as a woman I have to plan this.
>
> I've thought about it. Because it's tough. You know, wanting the balance with the career and the kids. I'd like to have kids and I think it's important to their development to spend the first three or four years with their mother, but at the same time, if I did that, I mean—three or four years in chemistry—if you miss that, you can say goodbye to it for life.

Due to the preponderance of technical majors and high college grades of the former valedictorians, the undergraduate fields of the sample were generally extremely stable. The decision by college sophomores to leave pre-medical studies is more typical than unusual. However, the eventual shift of eight women and one man away from pre-med majors was a glaring exception to the stability of major choice among this academically gifted study group.

Women in all majors, we discovered, raised concerns about the merging of family and careers. Although none were married or engaged at age 20, a third of the female valedictorians during the sophomore year of college raised the issue of managing career in the context of expected family roles.

The following year, the third year of the study, we explored this theme with the interview question: What would your life be like as a member of the opposite sex? (Table 6).

Table 6
Valedictorians' Anticipation of the Difficulty of Life as the Opposite Sex

	Harder	Easier
As a WOMAN	**Career:** *Social Barriers.* -It's twice as tough to be a woman. - Society isn't changing that much. -There's discrimination in every field. -There are fewer women at the top. -It is harder to advance. -I'd be frustrated by the limitations society would put on me. *Harder to Find Good Job.* -I'd be very worried about finding a job that would suit my talents, that would match my abilities and get paid for it. -There are few women in industrial arts; I would try business. *Advancement.* -A woman has to be one step ahead of everybody else. -I'd be judged on my appearance, my looks, and I don't know if my natural abilities could compensate for that. -Maybe I wouldn't go so far in my career. I couldn't be as confident or sure of myself about how high a level I would like to achieve. **Personal:** -I'd have to worry more about the children aspect, have to plan for that. Mothering would be a whole different ball game. -I would probably have to bear the most pain in that situation (marriage). -I would not be as free-going, as travelish; I would probably be more stable.	
As a MAN	**Career:** -I'd feel more pressure to be more definite about a career. -It would be tougher as a man . . . more uptight about having to support a family. -I'd be more worried about my career, once I married, how I'd support the family. -How I am going to support my family would be a concern. -I'd be worried about getting a good job because I'd have to support a wife and kids. -I'd probably be more concerned about a career. I'd feel responsible to be breadwinner of the family, so I probably would be less likely to teach, and make more money. -I'd have to work full-time. *Women have edge due to quotas.* -It is more difficult to get into medical school as a man. -I'd be a lot more worried about getting into a good Ph.D. chemistry program. -Women have lots more advantages. I think that if I had the same grades and the same abilities as a guy, I wouldn't go as far. -It is easier to get an engineering job. -Women benefit from reverse discrimination allowing them to get into schools easier. **Personal:** -For one thing, I wouldn't want to get sent off to Beirut or Grenada or someplace.	**Career:** -It is harder for a woman to be a vet. -There is some discrimination from male professors. -In my classes, it would be more fun not to be the minority. -Then I wouldn't have to think about how a kid would fit into a law career. Men have it easier 'cause they don't have to worry about how to fit children into a career. -I'd like to have kids and spend first 3-4 years at home, but 3-4 years in chemistry—if you miss that, you can say goodbye to it for life. -A lot less worries about my career (the ministry). -Dad doesn't think I can be a veterinarian. -Being a man would make things a lot easier because I wouldn't be as responsible for family orientation. -I would probably advance further. **Personal:** *Safety/Freedom.* -I wouldn't be afraid for my personal safety (4). -I'd be able to have a good time—go out to the bars. -I'd be cockier. -I'd be rowdier. -I'd jump in the car and drive to California. I wouldn't have to worry about looking bad insofar as dating people is concerned . . . my reputation. -I'd be wilder. *Marriage.* I wouldn't be so pressured to get married and have a kid. -If I were a guy, I'd get married after I finished everything I wanted to do. -Men have more of a choice about getting married. *Other.* -My father would finally have the son he always wanted.

Analysis of the responses to this question showed that women and men envisioned instances in which their careers and personal lives would be similar or different as a member of the opposite sex. Women said that they would find it easier to enter and advance in careers if they were men and that they would feel freer and physically safer. Men said that they would find it more difficult as women to advance in professions and to balance career and family. Women consistently reported that life as a man would easier because they would not have to worry about combining future family roles with career participation. Approximately a dozen female valedictorians felt that it would be more difficult to be a man because of pressures to succeed professionally and to support a family. Many women saw both an easier and a more difficult life as a man, but no man saw an easier life as a woman. No man said that it would be easier in any way to be a woman. Over and over, women said that they thought theirs was the more difficult path because, as one woman said: "Men don't have to worry about how to fit children into a career."

These interview findings prompted the collection of questionnaire data in order to explore the effects of anticipated family roles on the career aspirations of female and male high school valedictorians. In the fourth year after high school, males and females did not differ in their college academic achievement or in their plans for graduate school. Educational aspirations for postgraduate study were extraordinarily high: 75 percent of the sample planned graduate school either directly after college or after a period of work. As in college academic achievement, there was no gender difference in graduate school aspirations between men and women study members. In fact, women have entered graduate school in greater numbers than men in the six years since college. As college seniors, men and women placed an equally high value on the use of their intellects and best talents in careers. The study members, with the exception of one man, plan to marry. With the exception of this man and one woman, all of the valedictorians plan to be parents. All study members plan to work outside of the home. Table 7 shows the career participation plans of the sample.

Table 7
Career Participation Plans (1985)

Labor force expectations	Females (#)	%	Males (#)	%
continuous and full-time work	15	33	35	100
continuous full- and part-time work	4	8	-	-
discontinuous paid work	27	59	-	-

The gender difference that strongly confirmed the interview data was the finding that 31 of the 46 women valedictorians do not plan continuous, full-time work. The 31 women who plan lessened career involvement plan to interrupt careers or to work part-time for childrearing. All of the 35 study men plan continuous, full-time, paid work for the rest of their careers, although one male valedictorian has said that he is willing to take turns with his partner in career involvement.

The literature on women's career development and our experience with women leaving pre-medical fields led us to expect a close relationship between a woman's presence in a male- or female-dominated profession and her plans for labor force participation. We anticipated, for instance, that women would choose female-dominated professions such as teaching or nursing partly as a result of how well these occupations could be combined with family involvement. However, the degree to which women studied in male-dominated majors was unrelated to their plans to practice continuously or full-time (with correlations near zero). Half of the women in the group were found in the male-dominated fields of engineering, science and mathematics, agriculture, and business. Of the 24 women in these fields, however, only 7 planned continuous, full-time work. In other words, more than two-thirds of the women who entered male-dominated fields planned to reduce or interrupt their labor force participation. These plans constitute a problem in fields in which career participation is generally continuous and age, rank, and income are highly correlated. Table 8 shows the career participation plans for study members enrolled in majors that are male-dominated, female-dominated, or have equal gender representation. (The gender makeup of fields has been defined both by college student enrollment proportions and by percentage of male and female practitioners in the related occupations.)

Table 8
Female Valedictorians:
Traditionality of College Major
by Participation Plans

	Employment Plans		
Gender composition of occupation*	Full-time and continuous (#)	Not full-time and continuous (#)	Total (#)
Male-dominated	7	17	24
Equal male-female	4	6	10
Female-dominated	4	8	12
TOTAL	15 (33%)	31 (67%)	46

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*Male-dominated fields are engineering, agriculture, science, mathematics, business, and architecture. Female-dominated fields are nursing, education, physical therapy, and English.

The degree to which women were found in nontraditional fields also was unrelated to college grade point average, ACT scores, parents' education, or family socioeconomic status. There was no difference in graduate school expectations between women in traditionally female- and male-dominated major fields. Women in male-dominated professions were somewhat more interested than other study women in job prestige, high income, and jobs that allowed them to use their intellects (r's circa .30, $p<.05$). Women in female-dominated professions were more interested than other women in working with people, in jobs that allow mixing family and career, in flexible employment hours, in suiting parents' wishes, and in helping others (r's circa .30, $p<.05$). Women in female-dominated professions also were somewhat more religious than other women ($r=.24$, $p<.05$).

Top women academic achievers lowered their career aspirations, therefore, in terms of labor force participation plans, but not by shifting into female-dominated professions. In fact, analysis of the socioeconomic status of the study group's own aspired professions showed no gender difference. The socioeconomic status of women's expected professions was significantly related to plans for continuous, full-time employment, however ($r=.33$, $p<.01$).

Women's reports of the work that they expected to be doing in their 30s differed from men's statements in several ways. First, seven women listed childrearing or homemaking in addition to career fields. Two women said that they would be working in a career or as a homemaker, and six specified part-time employment. No men mentioned any consideration of family expectations or work schedule in listing their current career aspirations, although the only parent (male) in the study at that point listed his career aspiration as "work and support my family until our security is established." One of the most outstanding students in the study group reported her career ambition as "either working as a physician or mother and homemaker."

The listing of two very different career possibilities was more characteristic of the women than the men in the group. Women's professional expectations were also more vague than those of the majority of male study members. Men tended to report an occupation, level, and professional setting, whereas women did not. For example, a female accounting major listed her future career field as "accountant" while a male in the same field wrote: "Comptroller, senior executive in private industry." A woman listed her career ambition as "trying to run my own company in whatever looks promising"; a man planned "my own marketing consulting firm."

As college seniors, the dramatic difference between men and women who were high school valedictorians was not undergraduate academic achievement or graduate school aspirations. Both males and females continued to earn superb grades, win high honors, and receive merit scholarships. Women chose difficult curricula and prestigious careers as often as their male counterparts. The important differences were in women's lowering their intellectual self-esteem and their expectation of moderating career involvement to accommodate future parental roles.

Postcollege Years

The second half of the post-high school decade began to reveal the actual relationship between academic success and vocational achievement for men and women who were the "best" students in their high schools. The early research focus on gender differences masked the differences in career aspirations among women in the study. In the fifth year of the study, therefore, analyses concentrated on the career-related differences among the study women.

Analyses relied on both qualitative and quantitative data. First, women were classified into two vocational groups according to a broad definition of vocational achievement that included professional aspiration level, work participation plans, current professional status, and family/work role expectations. This classification was initially carried out independently by three raters who had worked with the study group for at least three years. Quantitative measures of the classification criteria were then used in discriminant function analysis to investigate the differences between the two vocational groups. Raters used a set of specified criteria, but also drew on interview data in assigning women to groups. The ratings utilized vocational standards that included current and aspired career and educational level five years after high school, plans for labor force participation, and relative importance of work and family roles. The analysis method follows the method in the Terman Studies of Genius, in which comparisons were made between the 100 most and the 100 least vocationally successful men in his sample (Oden, 1968).

The valedictorian study, like Termans's *Genetic Studies of Genius*, defines vocational level according to the income, prestige, and training required for various jobs. This standard definition also appears in analyses of the Dictionary of Occupational Titles, in which census data are used to rank jobs by their level of complexity, required training and aptitudes, and earnings (England & Kilbourne, 1988). The specific scale used to rate occupational level in the Illinois Valedictorian Project is the Hollingshead (1957) Two Factor Index of Social Position.

Two distinct vocational groups emerged among the women who had uniformly achieved at superb academic levels in high school and college. The resulting groups classified 22 women as high vocational achievers, the "A" group. The remaining 24 women fell into the "B" group of women who plan to design their work lives around family considerations. Women's group membership was almost completely accounted for by their varying approaches to career participation. The A group women plan more continuous careers and later marriage and childbearing than B group women. When A women plan to reduce their labor force participation, they anticipate working part-time rather than interrupting paid work altogether. The A group members had more research and job experience in their field as undergraduates. Their mothers were more highly educated than those of B group women.

Finally, A women were more likely than their less vocationally centered peers to desire to help others through careers but not necessarily by working at "people" professions. These variables explain women's group membership accurately. Discriminant functions correctly predicted the group membership of 94 percent of the study women. A and B women showed no difference in ability, intellectual self-esteem, college quality, or desire to seek intrinsically fulfilling professional careers.

"Success" does not necessarily mean performance in high prestige occupations. High-level career attainment is only one form of achievement, but it is a measure of success that is greatly valued by the valedictorians themselves. Several indications point to the value that academically talented females place on continued "public" vocational attainment. First is women's serious approach to choosing college majors. "If I could, I'd be a musician. But there's just more certainty in a profession like physics." An English Ph.D. student and former architecture major told researchers: "I do have a drive for success. A very strong one. A drive for achievement. And, in some ways I feel like majoring in English is denying my intelligence, which is absurd. But I still get that feeling sometimes." Regardless of their participation plans, women take careers seriously. Second, study members uniformly value careers in which they use their best talents and their intellects. Third, and most telling, there is no difference in the socioeconomic level of study men and women's aspired professions. All of these findings point to the consistently high value that women place on socially recognized adult career attainment. After all, their early successes were all achieved in the "system" of externally prescribed tasks and clear, socially sanctioned rewards.

In sum, family background, education, ability, and intellectual self-esteem have little to do with study women's early adult vocational activities and aspirations. Nor do gender-related personality or achievement motivation differences explain women's choices. Job experience, career values, and marriage and family plans are, by contrast, extremely powerful measures in explaining the vocational choices and future plans of female achievers in the early years after college graduation.

The achievements of the female valedictorians ten years after high school are impressive. Fifty percent of the Project women had completed some graduate study by 1991. Study women are physicians, attorneys, doctoral students, scientists, and business people. Despite the impressive achievements of the A group, however, women study members still fall into two distinct vocational groups. And women as a group are still planning lower-ranked, less demanding careers than the group of their male peers. In their late 20s, roughly a third of the women, in contrast to nearly all of the men, are pursuing high-level careers.

In analyses that included A women, B women, and men, A women resembled men more closely than they resembled B women. However, the variables that clearly separated women into two vocational groups failed completely to explain men's vocational patterns.

Case Study

Group findings give an overall profile of the early career patterns of academically talented women. Interview data trace the stories of individual valedictorians over the decade following high school. The profiled student, Sherri (a pseudonym), demonstrates the post-high school experiences that have led to exceptionally high career achievement. The narrative is often in Sherri's own words; all quotations are verbatim responses from typescripts of tape-recorded interviews.

Sherri

Sherri grew up in a small industrial city in Illinois. She graduated salutatorian in her class of 180 at a Catholic high school. (The valedictorian, interestingly, entered the local community college after graduation, dropped out, and has never reentered higher education.) Sherri's parents had not attended college; her mother had completed high school, her father had not. Sherri's father worked as an electrician and her mother was employed part-time in an elementary school as a cafeteria worker. Sherri's home was not one with a lot of books or discussion of science or world events. She says her parents were behind her high achievement, though, placing great value on working hard and doing one's best. By the first grade, Sherri already knew that she was a top student. She read independently and did well in all of her classes, but she always enjoyed math and science classes the most. "High school came easily for me, it really did. I worked. I was socially active. I went to sports events. I never really gave up anything that I can think of."

In high school, Sherri had a teacher for physics and chemistry who was trained as a chemical engineer. He encouraged Sherri to consider medical applications in physics. He also urged her to attend the engineering open house at the state research university. Sherri was impressed by the nuclear engineering exhibits and the people she met at the open house. She told interviewers: "So I guess I applied in nuclear engineering more or less on a whim." Sherri found that college was not as effortless as high school. After receiving a "D" in her first semester of college calculus, she changed her study habits and became more serious about her classes.

During her first two years of college, Sherri was unsure about whether she wanted to remain in engineering. She considered law school. In her sophomore year, Sherri got to know some graduate students and professors. "I'm in nuclear engineering and I'm just now getting into my field. I've been talking with people that are in graduate school now. People that have gone out to work and come back. Even professors."

Sherri's adviser recommended a class in bioengineering her sophomore year for which Sherri lacked the prerequisite. When Sherri expressed strong doubts about her preparation, her adviser insisted that she could handle the course and accompanied her to the professor of the class to ask his permission to take it without the background course. The professor agreed, providing that Sherri would keep in touch with him during the semester. She not only did well in the class, she became well-acquainted with that faculty member. At this point, Sherri still didn't know whether she wanted physics or engineering, work, or graduate school. She still talked about possibly entering law school. In her sophomore year, she had the following to say about her career:

> Maybe I won't even like the field when I get there. I really don't know. Maybe I won't want to cope with it after I get done, maybe I'll want to say "forget it, I want a family." Stay home. Throw it all away. I don't know. At this point I hope not because I really enjoy what I'm doing right now. But I don't really know what the industry's going to be like at all. So I guess right now, ideally, I'd want to work because I think I would be unhappy if I didn't have that stimulation. So maybe I could have something I could do at home.

The professor whose course she had taken recommended Sherri for a research assistantship in a lab. Sherri took the job, but she had a lot of doubts about her ability. She said: "When I was approached for the job it took a lot of convincing. I didn't want it. I was afraid this professor was assuming my physics background is a lot better than it is." In the lab, Sherri found that she was able to do the work. She got to know more graduate students and faculty in nuclear engineering. She started being known around the department as the "medical engineering" person. She began spending time socially with graduate students. That summer, following her junior year, Sherri followed a professor's recommendation and took a summer job at a national laboratory in the midwest.

Again, Sherri initially doubted her ability. She told interviewers:

> At first I was mortified. I just couldn't believe what they expected me to do in eleven weeks. It was two new computer systems and I hadn't done any programming since my sophomore year, but I think it was probably the best experience I ever had because now I know I can do it. Throw something at me. I'll live through it and work it out.

The summer job helped Sherri believe that she was exceptionally competent—something people around her had been telling her for the previous three years. The job also allowed her to see herself in a high-level position. Sherri said: "It wasn't what I expected it to be. It was on one level. I mean, there are fantastic people up there doing fantastic work. But they are people and they have a lot of good times and they are not gods or anything. I think wherever I end up, I'd be OK." She returned to this idea later in the interview: "I thought there were a lot of people who knew everything about everything. This *is* a national lab, these people *are* Ph.D.s. And they are just people. And they make mistakes."

During her senior year of college, Sherri was offered a research project in radiation technology in a hospital. She was now considering which Ph.D. program would be best in her specialty, and spoke knowledgeably about the work of potential research supervisors around the country. In the interview that year, Sherri responded to the quotation read to her from two years before in which she had said she might give up a career for a family.

> At this point the career comes first. Last spring I did a lot of things with graduate students. That and my [national lab] job have probably strengthened my conviction. There really was never any pressure put on in high school. It just happened more or less. Now I see that there is potential and I think it's silly to waste it, so I want to be good at what I'm doing.

As a college senior, Sherri said she didn't care about what other people thought of her or what her peers were doing. She said she would deal with marriage and family decisions as they came up. The ultimate for her, she said, was "always being challenged. I can never perceive myself as being in a situation where I would stop learning."

Sherri began working toward her Ph.D. in nuclear engineering at a prominent research university on the east coast. She moved to another elite research institution to follow a research mentor when her interests began shifting to more biology-based medical radiation techniques and methodologies. After "teaching myself undergraduate biology," Sherri is currently finishing her dissertation in Cancer Radiobiology and has accepted a prestigious postdoctoral appointment. Her professional self-confidence and knowledge of career management in her field are considerable. She still does not think that she has extended herself to her full potential. "My mother says that if I am doing this well without working that hard, it would be amazing what I'm really capable of." And Sherri still has some ambivalence about the dedication required of a scientist. "I have always had a social life. I refuse to give that up." Sherri plans to marry and have children, a goal she sees as compatible with continued career involvement.

Sherri is among the most successful study women in her early career. Her current achievements are based on belief in her ability, fascination with her subject, and work and research experiences in her field. Sherri arrived in college with a vague interest in medicine and physics and with a strong background in math and science. Recognition from others, interaction with practicing scientists, and involvement in undergraduate research all strengthened her commitment, identity, and tacit knowledge as a scientist.

Summary

For academically talented women, the process of undergraduate career planning includes an extra stage. Women not only decide on a vocational direction, they consider what emphasis to place on career as one of multiple major life roles. This planning occurs before women know or can control any of the contingencies that they anticipate (Almquist, Angrist, & Mickelson 1980), and the need to combine roles obscures women's envisioning of professional possibilities. Fortunately, stories like Sherri's point to undergraduate experiences than can sharpen career images and increase intellectual self-esteem so that choices can reflect a more realistic view of adult achievement.

Male Valedictorians

The early years of the Illinois Valedictorian Project explored gender differences and then differences among study women. We know from these analyses that all of the male former valedictorians began college; that most men pursued majors in science, business, and engineering; and that the academically talented men excelled in college academics. We also know that men's self-estimate of their intelligence remained constant during the undergraduate years, with one in four men classifying himself as far above average in intelligence in relation to peers. Finally, we know that male valedictorians plan continuous, full-time labor force participation.

Recall that the factors that separated the Project women into two distinct vocational groups failed completely to explain men's career patterns. Mother's education, service-related values, career participation, and family timing plans bore no relation to the aspirations and early career accomplishments of academically talented men. This discussion, then, focuses on the development of the males in the Illinois Valedictorian Project.

Current Status of Male Study Group

Sixteen men were married by September 1991, about 46 percent of the study males. One of these men is now divorced, and nine men (22%) are parents. Of these sixteen men, half married in the last two years, at or after age 26. For the men, early marriage is associated with lower professional and educational attainment. The three men who married before completing college are all parents and each is among the lowest vocational and educational achievers in the study. For two of the three, the economic necessity of supporting a family clearly has reduced educational and employment possibilities. The third has chosen a rural life centered on his family's fundamentalist Christianity. His decision to be a farmer follows an undergraduate degree in accounting with highest honors.

Three men have not completed undergraduate degrees and each of their stories is different. The first, an African-American study member, left school after his sophomore year to work full-time to support his wife and infant son. Now the father of two children, he has no plans to leave his position as a delivery company supervisor to pursue a degree. A second former valedictorian is actively pursuing an undergraduate degree after a hiatus of several years. A creative writing major, this working-class student has chosen to fund his studies through employment and financial aid grants, rather than through loans. He is currently working full-time to save money for his final year of college. A third Project member dropped out of a prestigious engineering institution when his computer consulting business took off. Currently supervising an engineering group at a high tech firm, this young man sees little practical reason for a college degree and has no immediate plans to resume undergraduate study.

Forty-three percent of the male valedictorians have completed or are close to completing graduate degrees. They are studying law, science, business, and engineering. Graduate school has proven inspirational for some valedictorians and trying for others. Study members have entered programs at prestigious graduate institutions, including the Wharton and Kellogg business schools, MIT, and the Harvard Law School. One male student told us that the best part of the past two years was: "The discovery that I could be intellectually challenged and stimulated by legal work and realizing that I have the preparation and the ability to do very well professionally." An engineering doctoral student enjoys summer research in aerospace engineering at an Air Force base he reaches by piloting his own small plane.

Other students have found graduate school personally difficult. A male law student wrote that "competition at school makes me realize I'm no longer a 'big fish'—just one of the masses." Another male attorney was looking for a summer job when he wrote: "After 20 years of education, 7 of it 'higher,' they finally broke my spirit this spring. Problems because my record is not great on paper, but my references and my work are very good. Tough to break in. Also, my grades have suffered because of the need to work my way through school." This student left a metropolitan law firm to work as a military lawyer, a position he enjoys. Two men have left graduate programs without degrees. The first left a top MBA program after three weeks, saying that "the program was just not for me." Another man left a Ph.D. chemistry program at a top university after he "suffered a mental meltdown. . . . Nothing serious really, just burned out on chemistry and took a leave of absence. A trying time."

Most graduate students write about their progress without commenting about extreme satisfaction or dissatisfaction. Many look forward to completing the school "grind" and beginning to work in their professions.

Early Adult Careers

The Illinois Valedictorian Project has found that gifted female academic achievers consider balancing work and family to be central to their career aspirations and attainment. Men, however, have uniform expectations of continuous, full-time labor force participation. Men omit family considerations in interview discussions of their professional plans and goals. And the variables that account for women's early career paths utterly fail to explain the career differences among men. The early career patterns of the valedictorian men, therefore, merit separate attention and analysis. A 1988 questionnaire of professional and personal activities along with interviews conducted in 1990-91 reveal several trends among the male valedictorians.

The men in the valedictorian study are not as distinctly separated into vocational groups as are the women. A few men stand out as high achievers in graduate education and employment. For example, one law student clerked for a federal judge before joining a prestigious Chicago law firm. Another completed a highly selective special MBA program and became one of the youngest account executives at a major advertising firm. A third man taught at a selective liberal arts college while completing his Ph.D. in mathematics. He is now conducting postdoctoral research in Japan. A few men are currently working at distinctly lower occupational levels—as measured by income, prestige, and required training—than most of the group. One college dropout is working as a nonprofessional for a delivery company. Another male study member is farming at a marginal profit level. Most of the male valedictorians, however, are working at entry-level and mid-level jobs in business and technology. They are computer scientists, engineers, accountants, and business managers.

Another trend that emerges from the findings on the male study participants is the early consistency of men's career choices. Most of the study group majored in technical areas. The first few interviews established the value that men place on choosing college majors that would prepare them for prestigious, high-paying, secure careers. Since high school graduation, the valedictorian group as a whole has been practical and career-oriented, rather than creative and intellectually oriented. As high school seniors, the valedictorians were largely uninterested in the adult goals of becoming active in their communities or working to change social and economic inequalities. In 1988, each valedictorian was asked what the "ultimate" was for him or her. Some study members listed only professional goals. Many spoke of marriage and family goals as well as careers. Only one man, an African-American engineer, listed community service as part of his "ultimate."

In this career-oriented, practical group, almost all of the men are working in the fields of their college majors and following the plans that they had articulated in their first year beyond high school. Some of the men are delighted with the reality of their early choices. The valedictorian who makes training films for an insurance company has the job he wanted in the location he desired. This student described to an interviewer during his sophomore year in college his dream job in the media department of a company in a midsized, midwestern city. In 1984, he described his professional expectations as: "Producing and directing educational videos." He wrote in 1986: "It's nice to slip into a job which fits perfectly the expectations I had." The student expects to move up in his current organization over the next three years. He was married in the summer of 1988 and recently became a parent. For him, the "ultimate" is: "A healthy, happy family and work that makes it a pleasure to get up in the morning."

An architecture student expressed during his college years his ambivalence toward the business aspect of architecture and design. In his junior year in college, he indicated an interest in urban planning. This student is now working as a project leader in a Chicago architectural firm. "I have a lot more responsibility in my work than most my age. Some of it was luck, but I'm starting to allow myself to respect my success." He is still uncomfortable about the business side of architecture. "I'm still struggling with the conflict of art and business in architecture. Working now, I've come to detest some of the insensitivity and irresponsibility and simple boorishness of many of our clients. I'm becoming increasingly interested in urban planning and social issues. As you can see, I still can't commit to anything."

The architecture student represents a group of male study members who are considering job changes within the same basic area or cluster of occupations. Six of the men specifically state their current goals as owning their own businesses. (Two of the women list owning their own businesses as professional goals.) One of these men was a student entrepreneur at his prestigious west coast university, establishing two successful businesses as an undergraduate and working in the summers in a venture capital firm. This study member worked for several years as chief fundraiser for a nonprofit organization in Chicago. He is now completing an MBA.

A third of the valedictorian men either plan to advance in their current professional or academic field or to move from established businesses to owning their own business. A Ph.D. student in medicinal chemistry writes that he plans to "take a job in the pharmaceutical industry in Chicago, Indianapolis, Cincinnati, or North Carolina area—have a couple of kids, house, you know, the WASP dream." In 1986, he named the company he would like to join. For this graduate student, the ultimate is "the means to support wife and kids and our parents (if they need it) and provide those sane things that were given to me when I was growing up."

Another third of the men have entered tentative career paths that they are considering and evaluating for the future. One man in this group works as an insurance analyst. In the next three years, he hopes to "evaluate my career direction. I would like to move out of the insurance field—probably into management consulting, if the opportunity arises. I'm working for something that I hope I would thoroughly enjoy. Also, I would like to think that serious relationship possibilities would arise."

A postdoctoral fellow in mathematics taught math at a college and folk dancing at a community center. His view of the future is: "Unclear. I have a wide variety of things I like, far more than I could do. One of my biggest highs is teaching people something so that they really learn it. In the long run I would like to be in a position where I could teach, say, math and folk dancing but still be involved in challenging learning experiences and travel. I also expect to have a family at some point." An engineer wrote: "I hope to get married in a couple of years. I'm planning to take courses in education, possibly thinking about teaching at some point. I have to do some more soul searching before I decide if electronics is my star. I plan on joining a different department at [his current company], a venture which will lead to increased independence and self-confidence in teaching and training others."

Three years after college, an Ivy League graduate described his professional expectations using his college major in philosophy: "If only the oracle would reveal the latent and benighted truth. Or is a truth something already revealed? I think Plato might have problems with that one!" This student now works from his parents' home as an off-the-floor commodities trader. The students in this group haven't committed themselves to specific long-term occupational goals, but they do have professional direction. They are optimistic about the future. Meanwhile, they are accumulating professional experience and weighing options before reaching final decisions about their career goals.

Members of the final third of the male valedictorian group are either entirely unsure of their career direction or very dissatisfied with their current activities. Two certified public accountants with prestigious firms expressed the desire to leave the accounting profession and coach high school sports. One has just left his company to retrain as a teacher; the other has no immediate plans to change careers. One writes: "I don't like my job and work. Too many hours; consequently, my personal life is the pits.... Part of my problem is I have no plan. I would say the immediate future involves finding a new job. I also plan to get involved in some type of coaching (on a volunteer basis) within the next year. I feel once I get a job I like, plans will flow much freer." For this student, the ultimate is: "To be happy. I realize this is vague, but given how unhappy I am, I long to be at peace with the world and myself. I'm sure that happiness will involve being part of a family I love and who love me."

As a college junior in 1984, the same man was asked what the ultimate was for him. "It's hard to say. If I follow my dream I'll be a high school history teacher and coach." Two men wrote especially poignant statements of regret about their career choices. One student, who graduates from law school this year, told us that the worst thing about the past two years was: "Deciding on law school, because I finally realized, two years after graduating, that I should have been an engineer." A chemist wrote that his ultimate was: "Death of course. The penultimate would be to have enough guts (and talent) to write fiction for a living. Sadly, I lack one of the two, if not both."

The sense of being unable to reverse or modify early choices or to seek ideal goals was echoed by five men who expressed disturbing views of the "ultimate." One of these men returned after college to the rural area where he grew up to work as a civil engineer with the state highway department. As a high school senior, this valedictorian chose not to enroll in the university where he had been accepted because he feared he couldn't measure up. He enrolled instead in a local community college, where he earned all As. He then transferred as a junior to the university that he had considered as a high school student. The student almost left in the first few weeks of the university term, again feeling that he "didn't belong" there. Much to his surprise, he earned all As in his first semester in engineering. Having achieved his educational goal with distinction, the engineering graduate took a job in his field. Two years later, he had a stomach ulcer, "caused by a stressful work situation compounded by a nagging, non-trusting new supervisor." Asked recently to state the "ultimate" for him, the engineer wrote: "Cruising a faraway highway, good tunes up loud, in a restored muscle car, while catching admiring stares."

An accountant in a prestigious firm also spoke of escape, writing that the ultimate for him was "winning the lottery, quitting my job, driving down to the Keys, and not coming back." A law student wrote that the ultimate for him was to "recapture the youth I lost or never had."

Factors Related to Male Vocational Patterns

Male former valedictorians vary in their early adult career achievements and aspirations. Although not as sharply divided vocationally as the women, the study men can also be divided into high and low vocational groups based on the Hollingshead scale ranking occupations by income, prestige, and required training (Hollingshead, 1957). As with the women's sample, analyses relied on both qualitative and quantitative data. First, men were classified into two vocational groups according to a definition of vocational achievement that included aspiration level, professional/educational status in 1986, and professional/educational status in 1988. The men, unlike the women, uniformly plan continuous labor force participation and the combination of marriage and parenting with full-time employment.

Work participation plans therefore were excluded from determination of the two male vocational groups. The classification into groups was initially carried out independently by three raters who had worked with the study group for a minimum of five years. Quantitative measures of the classification criteria were then used in discriminant function analysis to determine the appropriateness of the group assignments and to understand more about the combination of variables that differentiated the groups.

Three raters independently assigned the valedictorian men to groups. The raters used specified criteria: level of professional goal, level of professional or graduate school activity in 1986 and in 1988, and expectations for graduate study. The raters also drew on interview and questionnaire data in assigning men to groups. The resulting groups classified 20 men as high vocational achievers/aspirers—the A group. The remaining 14 men fell into the B group of men who are planning less highly ranked careers and educational attainment. Discriminant function analyses were performed to obtain the linear combination of variables that maximally separated the vocational groups. This technique addresses directly the question of how exceptionally high-aspiring men differ from other men.

The analysis showed that A group men had higher ACT scores and more undergraduate professional job experience than B group men. The A group members valued career prestige more than B men. These three factors were the most important in differentiating high and low achievers among the valedictorian men. In addition, A men attended more selective colleges, had higher intellectual self-esteem, were more motivated to master challenging tasks, and were more optimistic about achieving their goals in comparison to B group members. With these variables, 94 percent of the study men were correctly classified as A or B group members. The A and B men were no different in their family socioeconomic level, motivation to work hard, or desire to use their best talents in careers.

Standard measures of career achievement seem to apply to the early adult lives of the male valedictorians. Ability, motivation, job experience, and college prestige account for differences in the male valedictorians' current educational and professional activities. Unlike the female study members, the male academic achievers do not define their professional lives by actual or expected marriage and parenting choices.

The male valedictorians, unlike the females, are not currently affected by the actual or anticipated need to balance career and family. This gender difference relates to the finding that the study men are a more homogeneous group than the women in their early career activities. The three independent raters who placed the males into vocational groups had greater difficulty determining the group assignments than they did for the females. The differences between the two male vocational groups are not as striking or as clear as the differences among the female valedictorians. With few exceptions, the 26-year-old men are working full-time in male-dominated professions closely related to their college majors. All the males anticipate continuous, full-time labor force participation; all consider employment to be a central focus of their lives.

The most interesting patterns in the early careers of the male valedictorians emerge in the qualitative interview and survey data. First, and perhaps surprisingly, the top high school students are not achieving exceptional levels of early career attainment as a group. Sixty-three percent have not gone on to graduate study. Only four male study members are pursuing Ph.D. degrees. Only one of the four anticipates a career as an academic. More study women than men are pursuing Ph.D. and M.D. degrees.

The male valedictorians all have solid professional careers. All but three graduated college, and nearly all are working in positions that require their college degrees. Even the nonprofessionals are potentially high adult achievers. One of the nonprofessionals, in fact, is among the highest earners in the group. This man drove a truck for a delivery service and is now a supervisor for the company.

As a group, then, most of the male valedictorians have begun adult life with solid but not outstanding career prospects. (The current activities of five or six men still place them among the top levels of early professionals.) The males do not appear to be the intellectual or professional leaders of the future, although they are achieving perfectly respectable career levels. Terman defined success according to his subjects' use of their intellectual potential. The valedictorian males as a group are engaging in middle-level professions in business and technology, rather than pursuing primarily intellectual or creative careers. Should we have anticipated a different profile from the valedictorians in their mid-twenties? What does this finding indicate about school achievement and the practice of recognizing valedictorians?

Two possible interpretations might account for these findings. First, the study was conducted in the state of Illinois in the early 1980s. Few of the students grew up in highly intellectual families and all were products of an age group that valued a college education for job and income enhancement. The students entered the "hot" college majors of their cohort: business and engineering. The liberal arts were out of vogue, as was the college task of developing a philosophy of life and subscribing to a social ethic of public action. These trends, amply documented by Alexander Astin and others, were perhaps more pronounced in the midwest than on either coast (Astin, Green, & Korn, 1987; Johnston, Bachman, & O'Malley, 1981; Levine, 1980). This social context may contribute to the profile of group members as conformists and materialists, rather than creative risk takers or idealistic reformers.

Second, these students were gifted as academic performers. The college entrance examination scores of the men varied far more than their high school or college grade point averages. These men (and women) were talented at "school." Achieving a high grade point average requires organization, hard work, and comfort, with structure and authority (Bloom, 1985). This performance definition of giftedness overlaps but is not identical to conceptions of giftedness as intellectual or creative ability. Always dutiful, perhaps these men are continuing to achieve within established social structures and within defined social pathways.

That these academic achievers are subscribing to the careerism of their generation and continuing to be solid contributors inside the "system" is an observation, not a criticism. Important questions do emerge from this interpretation, however. What does the valedictorian story say about school achievement and the practice of recognizing valedictorians? Are educators recognizing the right group of young people as the "top" achievers? Are we rewarding the right things in school performance? Do we expect to see a connection between adult leadership and school achievement? Is education's appropriate aim the training of solidly able individuals to make significant but not exceptional adult contributions?

Another set of questions emerges from the finding that many of the valedictorian men appear to be extremely disillusioned for 28-year-olds who have arrived exactly where they aspired to be. What can high schools and colleges do to encourage academically talented men to explore their options fully? How can educators help young people to avoid the traps of narrow careerism?

Case Study

Len

The profiled male valedictorian, Len, represents an example of the smooth career path that has characterized the most successful men in the Illinois Valedictorian Project. Unlike Sherri, Len's development does not seem contingent on particular experiences or mentors. Instead, Len reports a "natural" progression from high school to college and from college to a career in law.

Len was valedictorian in a public high school in a wealthy Chicago suburb. He later described his high school as "too self satisfied, too homogeneous, and filled with midwestern middle-class children of management." Always extremely absorbed by ideas, reading, and intellectual challenges, Len still found time to be involved in a variety of activities at high school; once referring to himself as "Mr. Activities," he was voted "second most likely to succeed" in his class.

The oldest of two children, Len was the fourth generation male on his father's side to attend Princeton. His maternal grandparents were both professors at Ivy League institutions and all of his aunts and uncles had attended either Princeton or Wellesley. His father, a physicist, was also a voracious reader who guided but never pushed Len in any particular direction. His mother, who suffered from a chronic illness that was at times debilitating, was involved in community volunteer activities.

During high school, Len was always a high achiever, working first to please himself, then his parents, and then his teachers.

> I always felt as if it were some kind of a duty to get the highest grades I could earn. I never really felt as if I had a choice. I work very hard. That was drilled into me. I don't know exactly how my parents instilled that in me, but I know my sister and I are both like that and I never thought that there was any other option. People would always be surprised in gym class at how hard I tried at everything, because I wasn't very athletic. My reaction was, why are you surprised? That's what you're supposed to do. You don't really have the moral, responsible option of doing less than your best in normal circumstances.

Encouraged "but not pushed" by parental expectations, surrounded by role models of "doctors, lawyers, businessmen," Len says that going to a good college was an "automatic assumption." Upon graduating from high school, Len reflected: "I always succeeded in everything I tried. The only thing I wouldn't have succeeded in is sports and I haven't had to do anything in that."

Len approached his three years at Princeton with the same passion for ideas and learning that he had shown in high school. Never pressuring himself about either declaring a major or structuring a career path, Len chose courses because he sought exposure to ideas and knowledge that he might not naturally encounter on his own. "Sometimes I just have an enormous desire to know everything." Even after deciding to be a government major, he continued to take courses in a range of disciplines. His senior year course schedule was German Literature, the History of the Roman Empire, History of Art, History of 19th and Early 20th Century Architecture, and the computer programming language Pascal. Each summer, he read an extraordinary number of books, usually classics he selected from a reading list.

Freshman year, Len auditioned unsuccessfully for the orchestra. He never tried out again. After graduation, he told interviewers: "I usually tried to avoid things that I am lousy at, like athletics." At Princeton, he was involved in various activities, but was never an active participant in social affairs, politics, or crusades. He did not date seriously in college, although always spoke seriously and enthusiastically of eventually marrying and having children.

Len's approach to college and the influence of his father was evident in his discussion of a junior year music history course.

> It was a fantastic course. I took the course pass/fail. It was a very good idea, because with five courses it really helped me set my priorities. But I still learned a great deal because I am really interested. And it was very enjoyable and kind of funny, too, because my Dad took that course when he was here. And he didn't force me to take it or anything, but he strongly suggested that I take it; pointing out that ... he took [it] as an easy course to get rid of a requirement. Found himself fascinated by classical music by the end of the year. And so he now has a collection of hundreds of records, you know. See the cabinets [points] show he has been interested in it for all his life. So, I was already interested in it before I took the course and now I'm more interested.

During the fall of his senior year, a section leader in one of Len's courses told him about the Fulbright program and encouraged him to apply. Although he was unfamiliar with the program, it seemed to combine many of his intellectual and personal interests. After winning the Fulbright, Len spent the year after graduation in Europe, having chosen to study in a German city that he had visited several times as a child. Before he left for his Fulbright, Len took the LSAT. He continued to be undecided about his career path, but was comfortable with that ambiguity.

After a year in Germany, Len returned to enter Harvard Law School. His first year was difficult. "You don't have any of the positive reinforcement to let you know that you can do this and do it pretty well, which you tend to get from summer jobs and real jobs once you get out." During each summer, Len worked at a different law practice in Chicago. After graduation, he took the Illinois Bar and accepted a position with the firm he had worked with during his second summer. He deferred his position for a year and went out of state to clerk for an Appellate Court judge.

The clerkship completed, Len returned to work "at one of the largest law firms in the country," where he specializes in civil litigation. His decision to be a litigator seemed natural: "I just woke up one morning and realized that litigation was much more interesting to me than putting together wills or contracts or corporate documents."

Len's position as a lawyer requires that he work extremely long hours, including many evenings and weekends; it also pays a salary he describes as "outrageously high." There are times when he does not feel that he is using his full potential in his work, and he contemplates moving to the public sector where he would be more challenged.

> The money is not as powerful a lure to me as it is for other people. I'm looking for an intellectual challenge, for work that is satisfying and interests me, for an environment with people that I like to work with, and to be able to have more free time. I think the ultimate in life is a successful, challenging, enjoyable career, a happy personal life, which at some point probably, although I don't think absolutely necessarily, means being married and being able to pursue my interests outside of the law as much as I can in terms of time.

Throughout the past ten years, Len has had a solid confidence in himself, his abilities, and the choices he makes. He sees each step he has taken as "a logical outgrowth of the other." In discussing meeting the right woman some day, he said "I have a confidence that at some point it will happen. I don't feel a pressure to rush things." This seems indicative of Len's attitude toward life and the choices he has made since we met him during the summer after he graduated as high school valedictorian.

Summary

In summary, the early adult careers of academically talented men reflect a smooth progression from college majors into related careers. Lacking the extra career planning "stage" of deciding how career will fit with other life roles, some former valedictorians have become dissatisfied with early vocational choices while others have continued to progress without conflict. In contrast to female valedictorians, male study members are separated now by ability, early work experience, and the desire for prestigious careers. As compared with lower-achieving men, high career achievers attended more selective colleges, have higher intellectual self-esteem, are more highly motivated to master tasks, and feel more optimistic about reaching their goals. In short, the early career levels of achievement for men depend on ability, education, self-esteem, and motivation—exactly what we might expect would determine adult achievement.

AHANA Valedictorians

The primary valedictorian narrative of the decade following high school graduation featured gender differences. However, smaller pictures were obscured by the focus on gender in the primarily Anglo valedictorian group. One such picture, the experience of African-American and Hispanic valedictorians, cannot be portrayed by the simple plot line of gender. The small size of the AHANA valedictorian sample prevents direct generalization of Project findings to the population of academically talented students of color. However, the intensively studied individuals provide important insights into the post-high school development of top African-American and Hispanic academic achievers.

Asian-American Valedictorians

The single Asian-American valedictorian was a first generation Chinese male whose parents were educated only to the sixth grade. Because he is the only Asian student in the sample, he cannot be used to make generalizations about high-achieving Asian-American students, although his development is consistent with the research on this student population. He was similar to other AHANA valedictorians in the economic disadvantage and cultural factors that influenced his educational achievement and career choice. His cultural context affected his interpersonal reserve, his choice of a well-paying engineering specialty, and his family-arranged marriage.

African-American Valedictorians

The three female and two male African-American study members were valedictorians or salutatorians at public, inner-city high schools in Chicago and in the southwestern Illinois city of East St. Louis, and at a private, nonsectarian urban high school. Although their family circumstances varied, all of the students came from backgrounds that can be described as economically disadvantaged, and all were raised in African-American, inner-city communities. Only one African-American study member grew up in a household with two parents, one a high school valedictorian and the other a college graduate. Both parents passed away during this student's freshman year of high school. None of the other African-American valedictorians were brought up in a household with both parents present and none of their fathers were college graduates.

The mothers of the African-American women in the study worked full-time as an elementary school teacher, a computer programmer, and a police officer. Two of these women had college degrees, earned while their daughters were in school. All but one of the valedictorians grew up in large families with five to eight siblings. Most of the valedictorians had at least one brother or sister who had attended college, but the educational attainment of the group's family members was quite varied. The African-American students earned ACT scores below that of the valedictorian group as a whole. Their scores ranged from the national mean for college attenders (20) to the mean for the valedictorian group (25).

All of the African-American students attended college and only one has failed to attain a degree. Unlike the Anglo study participants, all but one of the African-American valedictorians took more than four years to earn an undergraduate degree. All received financial aid to attend college. Study members began their educations at predominantly white public and private institutions in or near their home cities; one male eventually transferred to a historically African-American college in the South. Four students majored in engineering; the fifth majored in communications and pre-law. One African-American female completed an MBA after four years of night study in combination with a full-time engineering position. A second began law school but dropped out after the first year.

Ten years after being the "best" students in their graduating classes, all of the African-American college graduates are working in their fields—three in engineering and one in business. The noncollege graduate, a male, works as a supervisor at a large delivery firm. This valedictorian is married with two children. The other African-American male in the study is also married, with three adopted children. All of the women are single.

Hispanic Valedictorians

The three Hispanic study members, all female, also grew up in economically disadvantaged circumstances and in inner-city, largely Latino communities. Each immigrated to the U.S. from Mexico sometime in their elementary school years without speaking English and each attended private Catholic high schools with predominantly Hispanic student bodies. (One of the students gave her valedictory address in Spanish.)

The parents of the Hispanic valedictorians were educated in Mexico, and none continued past elementary school. The fathers are skilled and unskilled laborers; the one mother who has worked at times outside of the home is a seamstress. One Mexican-American study woman is the only child and the only English speaker in the household. The other two valedictorians are middle children in families of five and seven siblings. Each was the first family member to attend college. The students' ACT scores are in the low twenties.

The three valedictorians attended local colleges after high school graduation, continuing to live at home and commute to school. One woman had difficulty persuading her family to allow her to attend college, but graduated in engineering and computer science after five years. A second valedictorian left school after her sophomore year when her family moved out of Illinois. After a year away from school because of ineligibility for state financial aid, this student returned to a local college and graduated at the top of her class in accounting. The third valedictorian majored in communications, but left school without a degree when her work schedule, marriage, and son's birth left her without the time and financial resources to complete the remaining 12 credits for her degree.

A decade after their high school honors, two of the three Mexican-American study members have earned college degrees. The noncollege graduate is the only married woman of this group, and she currently works as a bookkeeper and administrative assistant at a wholesale/retail business in her home city. The engineering graduate is working in her field, although it took some time for her to find work in her profession. She continues to live at home. The valedictorian who moved out of state with her family and graduated at the top of her college class is working as a bookkeeper in a small business and living with her family.

Post-High School Experiences

As a group, then, the African-American and Hispanic valedictorians have all completed at least two years of undergraduate education. Six of the eight students have earned college degrees and one has completed a master's degree. The college graduates are engaged in professional work and the two nongraduates have responsible supervisory positions.

This cross-sectional portrait of the achievements of AHANA high school valedictorians masks the common themes and experiences that these academically talented students reported over a ten-year period. The simple "facts" belie the struggles that all of these valedictorians have faced over the last decade. And the healthy educational and career statistics of the group fail to reveal the ways in which the fulfillment of promise in students of color differs systematically from the patterns of academically able Anglo men and women.

Much has been written about obstacles to the higher education of African-American and Hispanic students. Poor high school preparation, financial difficulties, and lack of role models impede the college entrance of students of color. Once in predominantly white colleges and universities, students contend with the additional factors of low institutional expectations, lack of informal faculty contact and support, and an often inhospitable social environment (Beckham, 1987/1988). First generation college students, especially from non-Anglo cultures, often lack sophisticated knowledge of the rules and the opportunities of the college and career "system." Instead of multi-cultural sponsors, mentors, and "interpreters" of the system, students of color encounter faculty and peer neglect or active racism and sexism (ACE, 1988). Despite their generally good high school preparation, strong support from high school faculty, and outstanding high school performance, the African-American and Hispanic valedictorians in the Illinois valedictorian project struggled with these and other problems identified in the literature on minority student academic and career achievement.

Money

Disentangling the effects of culture, race, and ethnicity from the confounding influence of economic status is an extraordinarily difficult task. Marguerite graduated salutatorian at a predominantly Hispanic Catholic high school. Now working as a nuclear engineer, Marguerite sees her story as more about money than ethnicity:

> It's not so much being a minority. It's whether or not you have the opportunities that money can bring, that money can buy. I was talking to somebody the other day. She was talking about picking up her daughter to begin a trip in which they were going to visit colleges and universities so that they could make a good choice for her. Her daughter is being prepared for college by going to a college prep school away from home. Now, that's something that I didn't have and very few minority students have—certainly students who come from financially impoverished backgrounds never have. Also, I never had a parent who could give me advice on college choices or on professional matters. I never had role models that I could look at and talk with about such matters as college. So it's not so much being a minority as it is that most minorities don't have the economic, the financial backing to take

> them along their career paths as smoothly as do those who do have that kind of financial base....I'm quite sure of that. I would guess that poor white people experience the same thing that poor Hispanics and poor Black people do in their career development.

Marguerite, like other African-American and Hispanic valedictorians, explicitly considered whether the secretarial or waitressing wages she would forgo in college were worth the eventual financial returns from a professional position. Like the other Hispanic women in the study, she worked 15-20 hours a week throughout college and, like almost all of the minority valedictorians, she contributed income to her parents and siblings while she was in college.

Taking care of oneself financially was a primary goal for African-American women valedictorians, who saw education as the means to economic self-sufficiency. African-American women repeated the theme of education and money as they relate to life options and choices. "I wouldn't want to be really poor where I didn't have any choice of what I could do," said one African-American female engineer. The African-American male college dropout, by contrast, came to see education as an expensive luxury in the face of immediate family needs. His decision not to complete his college degree rests largely on his perception that his future earnings and advancement will not be adversely affected by the lack of a college degree, especially since he feels that he will be able to receive continuing training inside his company. A Hispanic woman without a degree expressed a deep desire to finish college, a goal she sees as unreachable because of financial obstacles.

> God, I want to graduate. I wish I could have finished school. I mean, I would have loved to have finished school. It's very difficult if you don't have money. School is so expensive and with the baby and everything. I'd love to go. I wonder how people do it.

Money is a consistent theme in the self-narratives of the gifted students of color—as a motivator for education, as a competitor of education, and as an obstacle to education.

Family

As the valedictorian stories demonstrate, family obligations frequently overlap with economic commitments. And family, like economics, plays a crucial, sometimes determining role in the lives of the African-American and Hispanic valedictorians. Eric, an African-American engineering graduate, initially floundered in college as he attempted to help his large family with their expenses. Although the family did not actively support his educational goals, Eric's ties to his family remained strong. He has consistently made choices that enable him to help his mother and siblings and has recently adopted his wife's half-sisters and half-brother.

> We found ourselves trying to raise them and trying to give them something that neither one of us might have had when we were growing up as far as a more stable family environment. One that will probably promote education a little bit more than our families did. Our mother never really promoted education, or got on me about going to school. That's just something I just did on my own. So that's what we're trying to instill in them. That education is the road that they need to take. And to get their mind on doing it and stay out of the things that they have out in the world these days as far as drugs and all the other little things that turn you away. The most important thing, again, is to give them a chance to do well. To do well out of life. So, a lot of people say "well, why do you do it? "They're family. And you never turn your back on family if you don't have any other choice...And I'm still pushing my younger sisters and brother that you have to go to school. You have to keep on trying.

Eric's story demonstrates how a family without economic stability or values for formal education can impede the educational achievement of even an able, motivated student. Perhaps more significant, however, his story demonstrates the importance of family to Eric, and his continuing affirmation of his freely chosen obligation to care for his mother, siblings, and adopted children. Eric never wanted to break his primary family ties; he demonstrated his ability to achieve while continuing to prize his family relationships.

Equally compelling is the centrality of family for gifted Hispanic women. Louisa's experience, for example, is a story of family bonds. High school valedictorian, voted by her classmates as "most likely to succeed," Louisa told interviewers in her first year of college:

> When I was in high school, I wanted to have my whole life figured out. My whole life. Since then, I have come to realize that I cannot do that. Every decision I make must involve my parents. They have always relied on me for everything. I am the only child. They cannot speak English. It must be this way. They are in my thoughts all the time in every important decision I make. This will not change.

After two years of college, Louisa left her city university and her state scholarships to move south with her family. The move, prompted by the illness of a grandparent, meant a year away from school while Louisa waited to become eligible for financial aid in the new state. Entering the local college meant changing to a lower-ranked institution and a more limited accountancy curriculum. Unhappy about the move, Louisa never considered staying in Illinois. "I had no choice." Graduating at the top of her college class, Louisa was restricted in her job search to the town where the family lived. The small businesses in the area all wanted experienced accountants, according to Louisa, "so I gave up." Louisa took a job as a bookkeeper at a local department store, a job that did not use her accounting degree and paid $4.00 an hour. Recently, she switched to a similar job at a small business in town. Although she describes her duties as "limited work," Louisa enjoys her co-workers and the challenge of setting up a new computerized bookkeeping system for the business.

All three Hispanic valedictorians are aware that their gender dictates their inability to move away from the extended family sphere for college and work. "I'm sure that if I had been born a male, I would be out living on my own," says Marguerite. Clearly, none of the three *wishes* such a physical and emotional detachment. Marguerite continues: "I wouldn't leave my parents and I wouldn't want to. I don't want to do it." Conflict arises not because the women are blocked from desired autonomy, but because their strong educational and career motivation is difficult to sustain in the face of family involvement, cultural primacy of relational ties, and limited opportunities within a circumscribed geographic area. These valedictorians are strongly achievement-oriented, but their routes to achievement must take family into account.

Undergraduate Climate

Economics and family create one set of struggles for the valedictorians, a set of sociocultural factors that students bring with them to education. Another set of obstacles faces academically talented African-American and Hispanic students once they enter college and careers. Every one of these gifted students described lack of support, racism and/or sexism, and misunderstanding of the system in their undergraduate education and early careers.

The most vocationally successful Hispanic valedictorian, Marguerite, works as an engineer for a public utility. Marguerite's determination to fulfill her academic potential was fueled by her high school teachers and counselors: "They told me that I had the talent and the promise to go on and that I could be successful." Once in college, however, Marguerite told an interviewer she was not finding "any support, or I can't find any interest. Like if I see that somebody is interested in me or somebody is concerned about how I'm doing. You know, that pushes you to go ahead. I'm really trying hard and I see no motivation coming from anywhere." In her sophomore year, Marguerite said her professors weren't interested in students. "They just go and lecture, they don't care." One professor, she said, wouldn't even let her talk when she had a question. She called him once during his office hours: "He said 'too bad lady, I can't keep talking to you. I got too many things to do. Bye.' And he hung up on me. I was going to say 'wait a minute.' I couldn't do anything."

Although most of the students spoke of lack of support and mentoring, several reported harsh experiences of racism or sexism. An African-American engineering student, Barbara, attended one of the most prestigious private universities in the country. In the engineering program, Barbara's grades were average and above average. Despite her ability and adequate college performance, Barbara describes a constant struggle with professors, in which she was often ignored, once told she was stupid, and repeatedly urged to change her major to something "easier."

> I was very disappointed with the education that I received at [the university], very disappointed. For the most part, some of the key professors in the engineering department, they had problems both with women and with minorities. They specifically had problems that way and it showed in the way

> they talked to you, the amount of effort they put in trying to help you—I mean it was there. And I think some of the professors, specific ones, they just kind of worked to destroy that program for minorities, and when I look at everything objectively, it seems like it was more just because my skin was black than it was because I was female or anything else—well, maybe it was because I was Black and poor. This is the way I feel.

Barbara describes going to tutorial sessions to learn from the questions the other students asked, but knowing she would not speak or be called on. "I'd have all kinds of stuff to say, I really tried, okay?" At such sessions, Barbara said, she might be the only student present who had worked on every assigned problem until she was unable to continue. "I was always very studious and I was always trying very hard. There were a lot of times when I did poorly on tests where I just made a 'C' or whatever because that was the only thing I could teach myself." Barbara would survive a class and believe the next would be easier. "Every time I got someplace and I thought, okay, this isn't going to happen again and I would forget—I'd be caught sleeping again, you know. People always assumed that it was going to be easier to attack me because I was Black and then also I was a woman."

Without experienced family members or supportive teachers to elucidate the unspoken rules and methods of the educational "system," students of color miss opportunities and misunderstand strategies for success. Valedictorian Louisa, for example, discovered in her sophomore year of high school that she'd been inadvertently omitted from the computer list of honors students. "But I don't know, see, the computer got mixed up or something, and the second year they didn't put me in and I didn't complain to them. I didn't take any more honors courses." Lack of assertiveness, especially in the face of dominating authority, has been a problem for the Hispanic valedictorians. Even more daunting, however, has been the total lack of sponsors to help these able women negotiate novel achievement settings.

The study's African-American women have also suffered professionally from uncertainty about how to negotiate careers. Choosing colleges, majors, and early professional positions by starting salary, haphazard advice, and proximity to home is not a sophisticated way to build top level careers. Pat, for instance, has known since high school that she is interested in business, not engineering. She entered engineering because "in high school they were pushing engineering.If you were strong in math and science, that's all they really pushed." Pat still wants her own business but still has little idea of the steps to reach her goal of "owning my own business doing something that I really love or making a critical difference in someone's life."

Achievement Factors

If academically able students of color consistently encounter personal and institutional barriers to adult achievement, what enables them to persist in college and careers? The study's African-American and Hispanic valedictorians share a number of personal qualities that are the bedrock of their determination and achievement. First, the valedictorians were deeply affected by their early academic success. They believe in their potential. Marguerite, for instance, said that being valedictorian: "prompted me to pursue a career because I realized that I had potential. You have to live up to your talents. You have to use your talents, and without schooling and education it's not likely that you will." During her first year of college, Marguerite revealed the motivating power of her high school achievement: "I will always try to strive for something higher because I know I did it once. I have to keep doing it. I'm not going to drop dead. Just because I was successful once, I want to be successful again." Eric echoed Marguerite when he said that the ultimate for him was "to make the most of the abilities that I have been given."

These valedictorians never rested on their high school records. They are without exception hard working students and employees. Barbara saw her hard work as her only guarantee that she wouldn't be stopped in educational goals:

> For some reason I've always tried to do the best that I could, when I had a goal to reach, and my goal in high school was to get to college and be prepared, so I felt like, work your tail off in high school and if you won't be prepared for college then it won't be as easy for them to flunk you out as it might be for somebody else. And I think that was the Number One goal and the Number One reason why I tried so hard in high school.

Determination and persistence are additional entries on the somewhat old-fashioned list of character traits that the valedictorians share. During her struggle to complete her degree, Marguerite told interviewers: "I don't quit. I don't give up. I insist and insist." Eric also exemplified the ability to persevere in the face of obstacles: "I've always considered myself blessed with the ability to keep trying, if something else failed, just to keep trying, never give up. I always say that I might lose a couple of rounds but I'm here for the long run." Eric remembers his elementary school teachers telling him: "To keep working. To keep working."

Self-sufficiency also characterizes this group of high school achievers. Louisa: "I'm used to settling things by myself and so that's the way I do it." Barbara: "Number one—you've got to take care of yourself." Eric: "Don't be constantly coming to someone for help. You should be trying to help yourself."

Presented with so few role models, the valedictorians reached beyond acquaintances for inspiration and validation. Marguerite was encouraged by the reputation of the African-American woman who had preceded her in her job: "She was well respected and had earned her reputation. I haven't earned mine as yet and the respect is not there, but I don't think it's because I'm a minority or just because I'm a woman. If she did it, I can certainly do it." Eric was impressed by the success story of a high school dropout who returned to college on the GI bill and eventually became a physician.

> And I thought to myself, Eric, here you were coming out of high school being considered one of the top students in the city, or one of the "cream of the crop" students and you can do better than what you're doing for yourself. So, that story always stayed in me.

Alone among the African-American and Hispanic valedictorians, Eric had direct support from college faculty at his predominantly African-American college. More commonly, students in predominantly white universities found support in African-American and Hispanic student organizations. Barbara feels that she graduated because of the African-American engineering organization. "The only reason I made it through [the university] is because the network among the Black students there was tight. It is unbreakable." Marguerite provided volunteer clerical work for the Latino student organization "because they did so much for me." She met friends in classes.

> And a good thing they were there. I don't know why, I look for Hispanics, and I met Hispanics. I feel more at ease with them, I don't know why. Most of the time I'm talking half in English, half in Spanish. Friends don't have to be Hispanics, because I had a Black friend and a Chinese friend. But I've never had a white friend.

Finally, the students of color relied on interpersonal skills and service commitments to support their achievement. Virtually all of the group mentioned their genuine liking for people and their ability to work with others. Marguerite sees her sensitivity to people as an important and unusual quality in her profession: "I take pride in my work and when I work with people I see them as humans not as a means of getting something out of them or using them to go further up the ladder. I see people as humans." Pat considers her ability to relate to people to be one of her greatest strengths: "I really do care about people and where people are coming from and that may relate to being Black and being a woman. I take the time for whatever reason to find out where people are coming from. I really do care what's going on with people and how they feel about things." Mike also speaks of his interpersonal skills as his greatest career asset and his primary pleasure in work.

In sharp contrast with the overall valedictorian group, nearly all of the African-American and Hispanic valedictorians contribute to their communities through service activities. Helping others, being seen as role models, using their "people" skills, and deepening their awareness of the advantages of education are all important reasons for volunteering.

Case Study

The sole student to attend a historically African-American college, Eric is not typical of the valedictorian AHANA sample. Eric began his education at a predominantly white university, however, and his experiences there and in his transfer institution give a revealing perspective on the factors that hinder and those that facilitate college and career achievement for academically talented AHANA students.

Eric

Eric, an African-American man, graduated salutatorian of an inner-city Chicago high school with a predominantly minority student body. Forty percent of his freshmen classmates had dropped out of school by Eric's graduation. Only one of Eric's six brothers and sisters completed high school. This brother attended a proprietary business school, but was chronically unemployed by the time Eric was a teenager. "I always looked to him, but since he's been lagging, there's not really anything I can look towards, anyone else. I believe if I were to graduate from a university I'd be the only one in my entire family and extended family also that has done that."

Perhaps Eric's unique position in the family originated when he lived with a grandmother or maybe it had more to do with an early and enduring love of reading. Eric also points to the influence of "elementary school teachers, I can remember them. Some of the things that they would tell me. To keep working. To keep working." Eric's family was not simply lacking educational role models. He described his home atmosphere as an "uproar," saying that in his large family "there was always so much noise and distraction and I've always been the only one that really sat down and studied." He developed at a young age the ability to detach himself from noise and confusion and to concentrate deeply on what he was reading.

> Sometimes I get surprised to this day—I look back and see some of those things that I accomplished in high school. At the time I believe there were 5-6 of us children in the house. I believe that during high school I probably was one of the most underprivileged students, I mean as far as the finances. No one really knew it because I would go out and work after school at times just to make a little money to pay, to help get to school. To have money to have lunch fare, to have bus fare, to help with the struggle, to get to school. And just to work, just to do my work, that really was a struggle. [My family] could never really understand what I was trying to do or why I was trying to do it. But, I know, I was just fortunate—I've always considered myself blessed with the ability to keep trying if nothing else failed, just to keep trying, never give up.

Eric began college in the fall term following his graduation as high school salutatorian. In retrospect, he sees that he limited his educational options when he chose the local city university.

> I really blew it coming out of high school. I didn't apply to enough colleges because money—just my understanding and coming from my family—I probably blew a lot of scholarships and things that I probably could have received given my ranking and my overall activities at school. I possibly could have gotten a full scholarship somewhere if I had applied for it.

The structure of the university required Eric to begin his studies in a general liberal arts division and then transfer into his desired curriculum of engineering through a competitive process. Eric found himself in a series of courses that were unrelated to his areas of interest. He developed no relationships with faculty and, as a commuting student, was uninvolved in campus life. Worst of all, family problems had affected Eric's academic performance and he found himself ineligible to enter engineering. Eric dropped out of college and was out of touch with the valedictorian study for several years. (The valedictorian of Eric's class, another African-American male, dropped out of college for some of the same reasons. He has never resumed undergraduate study.) Family problems were at the core of Eric's disappointing start in college.

> I never really got a sensing there at the University, never really got my feet on the ground as far as studies. Seems like ever since high school, my family was always getting up and moving. Seemed like every 2-3 months. Family problems such as no one to pay the bills, that's one of the reasons why I chose to stay in the area at first, to try to help out my family with bills... I just thought there was the obligation. A personal thing. The family was so close, had a lot of younger brothers and sisters, trying to help them as I went along . . . . And after a while I just sat back and promised myself that Eric, what you're doing is really hurting yourself more than helping the family to go along. You're still not doing well in school; the family's going to survive whether I'm there or not. And that's what happened. I decided to go.

Eric transferred to a historically African-American college in another state. He chose the college because a high school administrator was an alumnus who was always "singing the [school] fight song in the hallways." Eric entered a co-op engineering program that requires students to alternate semesters of full-time study and full-time engineering employment. Eric's college experience was transformed by his new environment. For the first time, he became involved in campus life and activities. "I got a start in what I considered college life, getting comfortable in school."

Unlike at the city university, Eric received consistent support from his faculty at the historically African-American college. Even though his first year grades were adversely affected by continuing family difficulties, Eric said he received "a lot of respect from my instructors because they knew how good a student I was or how good a student I could be." His instructors told Eric that he would be able to complete the normal five-year program in four years if he worked diligently to master the fundamental concepts in the beginning courses. Eric followed this advice and became more and more involved in his academic work as he entered more challenging courses. At his previous school, Eric had been barred from courses in his desired major, but in the new school he was able to begin the engineering curriculum immediately, "doing something I always wanted to do." When a top engineering classmate asked Eric for academic assistance, Eric said he felt a new identity as an engineer and a renewed confidence in his academic talent.

The desire to be close to his family, especially during an illness of his mother, motivated Eric to choose co-op placements and a postgraduate position in his home city. He and his girlfriend of several years married before his graduation, which occurred nine years after high school. Eric works as a mechanical engineer and is active in volunteer service in the African-American community. Immediately following graduation, he and his new wife adopted her three young half-siblings.

The contrast between Eric's experience at his first institution and his second is striking. The environment at the historically African-American college provided him with social and community involvement and a feeling that he mattered. Most important, the encouragement and recognition of the faculty, the presence of a co-op program for financial support and job experience and the opportunity for meaningful achievement were in stark contrast to Eric's initial experience with higher education.

Summary

The AHANA valedictorians have surmounted external obstacles to continued achievement through strong personal qualities of persistence, determination, and hard work. They rely on peers, indirect role models, and the rewards of interpersonal engagements and community service to nourish their already strong motivation. Above all, the valedictorians rely on their deep belief in their talent, their potential, and their goal of an economically sustaining and personally fulfilling life.

High school valedictorians are the students that "should" succeed. The African-American and Hispanic members of the Illinois Valedictorian Project *have* succeeded: each is an educated, competent, contributing member of multi-cultural communities. The stories of these academically talented men and women of color do not reassure us about the inevitability of success for top African-American and Hispanic high school students, however. These capable, motivated, hardworking valedictorians have struggled for their success in higher education. They continue to struggle in careers. Cultural and economic factors have emerged as defining factors in the fulfillment of promise in academically talented AHANA students. Educators can learn from the struggles and successes of these exemplary students how to help other gifted and nongifted students of color. The "best" high school students of color make it through persistence, hard work, and almost unbelievable personal will and strength.

Relative Achievement of Male, Female, and AHANA Valedictorians

> One thing that intrigued me at my high school was that such an incredibly disproportionate number of the top students were women at that age and yet the further I go along, at each stage, there seems to be fewer and fewer women. I've never understood why that should be and I've never understood where all those women went that were in classes with me in high school.

These words come from an interview with a male attorney ten years after his graduation as high school valedictorian. The former valedictorian, Len (a pseudonym), spoke in response to the general question: What would you be interested in knowing about what happens to high school valedictorians?

The first decade of the Illinois Valedictorian Project has revealed an indirect relationship between academic attainment and early adult career achievement. Without knowing the findings of the ten-year valedictorian study, Len identified the central theme of the young adult lives of academically talented students. The realization of early promise is far more difficult and complex for academically talented women and AHANA students than for white male former valedictorians. As Len accurately observed, fewer and fewer young women are present as one approaches higher levels of prestigious careers.

Similar patterns characterize African-American and Hispanic academic achievers. The tale of high school valedictorians in the decade following high school graduation is primarily one of gender and race. Attrition of academically gifted women and AHANA students from high-level achievement settings and the lowering of their intellectual self-esteem begins as early as the sophomore year in college and continues through college, graduate school, and even postdoctoral work. By 1991, some women were among the highest achievers in the study but, as a group, women, African-American, and Hispanic valedictorians were achieving at lower levels than the white male study group.

Len was unsure about what caused the pattern of lower achievement by women. Possible relationships between adult career achievement, academic achievement, and gender and race emerge through the findings of the Illinois Valedictorian Project. The conditions under which high achievement is sustained become more apparent in relating the undergraduate experiences to early career levels of gifted students. Longitudinal study of a broad range of academic and nonacademic qualities and experiences also allows investigation into the adult achievement factors that interact with ability.

Tacit Knowledge

Women and AHANA valedictorians consistently revealed their lack of tacit knowledge about how to build their careers. Their identities as career achievers were more diffuse than those of their white male peers. Women and AHANA Project members were constrained in the development of career identity by their inability to see themselves in high-level career settings and by their lack of support and models.

Clarity and commitment to achievement goals rests largely on one's ability to see oneself in those roles. Women can see themselves as good students—they are already experienced at academic achievement and their supporters are often female teachers. They also can imagine themselves doing more of the same in college—continuing to be top performers. It is in imagining their career ends that women have difficulty. Not only do they have difficulty imagining exactly how career and family will be combined, but vocational ends themselves are unclear. Two women with extremely high college grades articulated the difference between career and academic identity:

> Going to graduate school scares me to death. Because, I mean, I like math but I'm not, like, a Mathematician. I just really can't see myself as a research chemist. None of my friends are chemists. I consider myself an academic chemist. I've always done well in my chemistry classes. But to actually go into a lab and they say, "OK, run this reaction," I have no clue. So, in that context, I really can't see myself... Maybe I'm just playing at being a scientist.

The second quotation is from a Ph.D. chemistry student in the summer before she entered graduate school. This student had neither science-related out-of-class experiences nor a professional reference group. She recently finished her Ph.D. and decided to leave chemistry without going on to the postdoctoral stage.

Academically talented AHANA students also have difficulty imagining themselves in high-level careers. One study member, an African-American woman, left law school after the first year, finding it too difficult to work full-time and be a law student. She had never discussed her work plans with anyone, nor had she considered the option of funding her first year of law study through loans. This valedictorian enjoys singing, and thought that she might like to become an entertainment lawyer. The law school that she attended was not one of the few in the country that prepares entertainment lawyers, however, and she had only a vague idea of what the specialty involved or how to implement a career in entertainment law. She knew no practicing lawyers in any specialty.

A major reason that many women and AHANA students find it difficult to develop the base of untaught practical knowledge for envisioning, planning, and implementing high-level careers is the lack of support, mentorship, and significant interaction with faculty. The most successful women in the valedictorian study were unusual in receiving special opportunities and attention from faculty. Most of the study women and AHANA valedictorians did not become close to any faculty person. Several asked the researchers to write letters of recommendation, because they said that no faculty person knew them well.

The African-American valedictorian who dropped out of college after his sophomore year was asked who had influenced him:

> My life has taken so many turns. At any given time it might have been anybody. Early on, I had a lot of influence from my sisters. I probably had some negative influence from my brother. I don't know, career wise, no one who has been a mainstay. People have been in and out, in and out.

A female education major discussed leaving the top science and math track in high school:

> I'm not exactly sure why I dropped out of the honors math program. Part of it was my own fault. But I wished someone had counseled me to really stick it out. I think I would have liked a little more encouragement. For someone to say: "you can do it, Pam." My counselors seemed to accept it as perfectly natural that I would drop out of the math program and not take advanced biology. I think if I'd have taken advanced biology in high school I would have realized how interesting I'd find it.

Anita, the Hispanic study member who dropped out of college one semester away from a degree, provides perhaps the most vivid example in the Illinois Valedictorian Project of the consequences of poor tacit knowledge. She describes how she approached a college counselor to arrange a part-time schedule for her remaining 12 credits.

> I couldn't understand. I mean, I want to go back and graduate there, it's a very good school. And I asked [the counselor] to explain it to me and the way she explained it to me, she said you're better off taking 6 credits. If not, you're going to lose credits. And I did not understand it. And I came home and I was depressed.... It didn't make any sense to me. Is that the way they do it? That's why I haven't gone back.

Implications for Education

Outstanding academic achievement does not automatically translate into high level career aspirations for academically gifted women and AHANA students. Tacit knowledge about managing educational and career paths can affect the eventual achievement of high school valedictorians even before they enter college. AHANA and first generation college students, for instance, often limit their college search and, like Eric, may overlook scholarship opportunities.

Top math and science students sometimes find themselves locked into an inflexible curriculum without having explored alternative majors. Since many engineering, science, and business majors require a commitment in the freshman year, high school instructors, advisers, and career professionals can be crucial in helping students become aware of academic options and their consequences.

The AHANA and first generation valedictorians might have lacked sophisticated tacit knowledge about college and major choice before beginning undergraduate study. The study group reported extremely positive secondary school experiences and relationships with high school teachers, however. They all benefited from guidance and encouragement from teachers and, of course, experienced public recognition from the entire high school and often from the wider community. The equally high levels of intellectual self-esteem reported by female and male valedictorians as high school seniors attest to their personal identity as high achievers.

Higher education, in contrast, often failed to provide necessary tacit knowledge for high performing female and AHANA students. The valedictorian study group earned high grades as undergraduates because they were bright, motivated, hard working, and persistent. A major task of higher education is the transition of the locus of achievement identity from that of school attainment to that of adult career performance. It is precisely this transition that caused great difficulty for the female, African-American, and Hispanic gifted students.

The inability to imagine high-level career achievement often reflects gaps in the tacit knowledge of top women and AHANA students. Even high achievers cannot realistically aspire to what they cannot imagine. The valedictorian study demonstrates that practical knowledge regarding careers can result from undergraduate research experiences and professional work related to the college major. Case studies reveal that such testing experiences provide an antidote to unrealistically low self-estimates of ability, allow students to envision themselves as high achieving adults, and give gifted individuals the beginning of achievement identities as adult professionals rather than scholastic performers.

Equally important for intellectual self-esteem and the development of career choices and identity is recognition and support of students by faculty. As Sherri's case demonstrates, faculty support must be active, making students aware of opportunities and sometimes vigorously advocating or even pushing students to take advantage of special opportunities. Faculty should not assume that their best female and minority students know how to choose a specialty, locate a research sponsor, or select a graduate program. Nor should faculty assume that exceptional students are familiar with practices of specific fields. The African-American student who left law school, for instance, was unaware of the connection between first year grades, *Law Review* election, and career opportunities.

As the stories of Sherri and Eric illustrate, social and work interaction with a professional reference group that includes undergraduate and graduate students as well as faculty can be an important component of socialization into a discipline. Peers, advanced students, and faculty can increase the accumulation of sophisticated knowledge about professional development for talented students. Professional reference groups also appear to strengthen a student's personal and public identity as a "scientist" or "engineer" or "artist," a necessary step in the transformation of students into adult achievers.

Valedictorian women demonstrate the presence of an extra "stage" in the career planning of college women for even the most successful academic achievers. Unlike men, women must decide the emphasis to place on career within multiple life roles. Hazy notions of how to combine career and child raising affect college major and vocational choices of academically talented women as early as the sophomore year of college. Female valedictorians make potentially life-defining choices as undergraduates without having practical knowledge of the realistic demands of high-level careers or models of how to manage career and family involvement, and without being able to envision the career component of their adult lives. Postsecondary curricula and even women faculty rarely address the issue of career planning in the context of multiple role expectations.

Given the difficulty of acquiring tacit career knowledge for the female and AHANA study members, these talented students are eager for guidance and open even to casual advice. Eric, for instance, chose a college for transfer because his high school counselor used to sing the fight song in the halls. A Hispanic study member stayed in college an extra semester because a job recruiter said that it would be helpful to add a computer science major to her engineering degree. A female agriculture student entered graduate school when a professor asked casually what master's degree programs that she was considering.

Several implications for higher education follow from these valedictorian stories. First, even top students lack tacit knowledge about managing careers. Mastering subject matter and earning academic distinction is insufficient to guarantee the translation of academic achievement into career attainment. Second, the power of career management advice and encouragement, particularly from faculty, is great. Third, the transmission of tacit knowledge doesn't always require formal or elaborate mentoring arrangements. Environments that foster interactions between faculty and students, provide opportunities for the formation of peer and graduate student reference groups, and facilitate active involvement in collaborative research lead naturally to the acquisition of practical understanding and tacit knowledge. Finally, students not only lack tacit understanding about their careers, they are often unaware of the existence and importance of such practical knowledge about their fields. Higher education administrators and faculty need to consider how to make students aware of the existence and importance of tacit knowledge and provide guidance about where and how students can learn the hidden curriculum.

Recommendations

The Illinois Valedictorian Project clearly demonstrates the difficulty that academically gifted students—particularly women and students of color—experience in educational and career planning. Average students presumably encounter similar obstacles in realizing their college and work aspirations.

Secondary School Educators

Project lessons for secondary school educators indicate that even talented students need assistance from teachers and counselors in choosing colleges and majors. Efforts to involve families of first generation college students and minority students should aim at increasing the family's knowledge of postsecondary education and its understanding of the value of postsecondary education, as well as widening the field of choices of colleges and potential majors. Teachers and counselors should encourage students to keep their career options open, but also recognize that many professional programs require decisions about college majors during the application process. For students considering vocational majors such as engineering, secondary school programs should be developed that acquaint students with practicing professionals and the nature of work in their fields of interest. Secondary schools also might consider ways to maintain relationships with talented alumni who otherwise might become disconnected from college faculty. Moreover, helping economically disadvantaged students obtain need- and merit-based financial aid is a vital service for high school personnel.

Postsecondary Administrators and Faculty

Postsecondary administrators and faculty should actively communicate practical knowledge about negotiating the campus environment and implementing career choices. In order to ensure students' transition from academic to career achievement, higher education institutions should develop structures and programs that expose talented students to undergraduate research, provide professional work experience, and establish faculty and student networks in academic disciplines. Establishing mechanisms for faculty contact and mentoring of students outside of the classroom is probably the most important facilitator of student educational and career development. Higher education institutions should continue efforts to establish cultures in which students become actively involved in academic and social systems, environments in which individuals matter, and institutions in which students are free of the debilitating effects of racism and sexism. The process of multiple role planning for women—balancing career and family aspirations—should receive explicit attention in the college curriculum and extra-curriculum.

Employers

Private and government sector leaders should recognize the difficulties of combining career and family for talented women. Professions can minimize talent loss among women by providing meaningful job and internship experience for undergraduates, extending professional mentoring opportunities to students, and educating college students in the tacit knowledge of managing careers. Contact with practicing professionals who combine career and family effectively also is an important step toward fulfilling potential in young women. Ultimately, however, employment institutions will need to consider significant changes in required work hours; continuous, full-time work; child care; child and parental leave; and employee mobility. Better labor force arrangements for high level work in combination with significant family responsibilities will allow the nation to maximize the talents of gifted women and permit men to participate more fully in childrearing and community service.

Conclusion

Len, the valedictorian who wondered aloud where all of the academically talented women had gone, was a third generation Ivy League graduate with high achieving parents. His speculation about women's careers not only reveals the indirect link between academic achievement and careers for women, but also demonstrates his own experience in which grades translate directly into career ambition and attainment.

> My theory is, I guess, that they [women] were expected to, or no one minded for them to do very well in high school, in terms of grades in high school math and things like that, but that didn't immediately, directly translate into career ambition. Whereas for me, one just seems like a perfectly logical outgrowth of the other. You do your best in a high school class and you get an "A." You do your best in a college class and you get an "A," you get admitted to law school and you do your best and you get an "A" and then, based on that you get a job as a law clerk and you work very hard and do a good job in that and make a reputation for yourself and it all kind of naturally follows. I assume that it must be the case for some people that the fact that you got an "A" in Miss Coppersmith's English class really bears no connection to how ambitious you are for yourself in your career.

The intensive study of gifted individuals over time can bring educators closer to understanding the variation in how an "A" in Miss Coppersmith's English class and an "A" in almost every other high school and college course might fail to translate into high career achievement for even the "best" women and AHANA students.

APPENDIX

Methodology of the Illinois Valedictorian Project

The Illinois Valedictorian Project was designed as a qualitative, longitudinal study of the background, experiences, achievements, and perceptions of top high school achievers. In the first ten years of the Project, the 81 study members participated in intensive semi-structured interviews and completed a variety of standardized and Project-designed survey instruments.* Findings draw from both qualitative and quantitative data collected between 1981 and 1991.

Sample

Following a pilot interview study of former high school valedictorians at the University of Illinois at Urbana-Champaign, all of the high schools in Illinois were surveyed to determine whether they recognized a valedictorian and whether the top student gave the traditional valedictory address. Of the 500 high schools (approximately half) that responded, about 350 recognized valedictorians and 270 had their top students speak at the commencement ceremonies. Within the population of these 270 schools, the first stage of the sampling procedure used the high school as the sampling unit. The goal of the sampling strategy was to include representative types of high schools. The sampling procedure, therefore, attempted to maximize the variety of high schools by nature of community (rural, urban, suburban), by type of study body, by public versus private control, by size, and by geographic location.

High schools were stratified by type and location. The schools were then arranged by high school commencement date in order to allow the attendance of the Project founder, Dr. Terry Denny, at each graduation exercise. Conflicts in graduation dates were resolved by choosing a high school in a category (such as location or student body type) that was not already represented in the sample. In this way, 33 public and private schools were identified and the sampling population turned to the valedictorians and salutatorians at these schools. Several schools recognized more than one valedictorian in cases of identical grade point averages. Salutatorians were included on the urging of pilot study valedictorians. A few nonvaledictorians and salutatorians were also included (ten students) on the advice of school informants who identified these students as the top students in their schools. Several of these honor students made speeches at graduation ceremonies. The small group has been retained in the study on the basis of analyses that show their similarity to the formally designated valedictorians and salutatorians.

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* Copies of Illinois Valedictorian Project interview protocols and survey instruments may be requested from the author, Dr. Karen Arnold, Boston College School of Education, Chestnut Hill, MA 02167.

Eighty valedictorians and salutatorians and 10 honor students received letters from Dr. Denny asking them to participate in a ten-year study. Of the 90 students, 7 did not respond, 1 student declined, and another joined the study but died soon after the initial interview. The nonrespondents included three valedictorians and four salutatorians who failed to reply to four letters. Two of the three valedictorians were co-valedictorians with sample members and each of the salutatorians' high schools were represented by the school's number one student. These considerations, as well as the very high agreement rate to undertake a major commitment, do not indicate that the ten percent nonresponse rate is a serious problem.

In sum, the nonprobability sample features a wide diversity of high school achievement settings, rather than a proportional representation of all Illinois high school seniors. The size of the sample, the single cohort design, the lack of directly comparable national data, and the nonprobability sample prohibit direct generalization of Project findings to the national population of high school valedictorians and salutatorians. As an initial study of a unique population, however, the maximization of high school settings for top academic performance is a feasible sample design. Remarkably, all 81 surviving members of the Illinois Valedictorian Project remained active in the study in 1991.

Method

Qualitative Data Sources

Observational data from high school commencement exercises composed the first data source of the Project and each student gave researchers a copy of the valedictory address. Students have also provided researchers with letters, resumes, writings, and art work. Karen Arnold or Terry Denny conducted individual interviews with each of the 81 valedictorians for each of the first four years of the study: 1981-1984. Field notes from graduation ceremonies were used in the first set of semi-structured, face-to-face interviews. Interviews of one to three hours began by exploring scholastic and family experiences, perceptions of achievement, and performance motives. Subsequent interviews focused on personal, academic, and career experiences and aspirations. About a third of the group was interviewed a fifth time between 1985 and 1989, when the Illinois Valedictorian Project was without funding. A complete round of interviewing was conducted in 1990-91. All interviews were audiotaped and transcribed. In order to determine patterns of responses, analyses of qualitative interview data were carried out by coding transcribed interviews by theme and sorting related pieces of text by category.

Quantitative Data Sources

In addition to the interviews, questionnaire data were collected at multiple points in the ten-year study. In 1981, soon after high school graduation, the Project participants responded to a section from the University of Michigan Social Research Institute national survey of 16,000 1981 high school seniors (Johnston, Bachman, & O'Malley, 1981). The annual survey included items on values and attitudes, educational aspirations, high school activities, and alcohol and other drug use. The Michigan survey also included an item asking respondents to rate their intelligence in relation to their age peers. The study group responded to this item at four points in ten years. The remainder of the survey was replicated in 1991.

In 1984, the valedictorians completed two standardized instruments measuring gender roles and achievement motivation. The Personal Attributes Questionnaire (PAQ) is a self-administered personality inventory that measures gender-related personality traits (Spence, Helmreich, & Stapp, 1974). The instrument includes a masculinity (M) scale, representing instrumental, agentic traits, and a femininity (F) scale, reflecting expressive, communal characteristics. (Reliability coefficients for the M and F scales range from .61 to .76.) The Work and Family Orientation Questionnaire (WOFO) is a measure of achievement motivation and attitudes toward family and career (Spence & Helmreich, 1978). WOFO scales include: Mastery, the desire for intellectual challenge; Work, the desire to work hard and be busy; Competitiveness, the desire to succeed in competitive interpersonal situations; and Personal Unconcern, the desire to avoid negative interpersonal consequences of achievement. (Alpha coefficients for the scales range from .50 to .76.)

A Project-designed questionnaire eliciting labor force participation plans and work values was administered in 1985. Work values items were drawn from a longitudinal study of Angrist and Almquist (1975), who had themselves modified an earlier scale of Rosenberg (1957). Items were chosen that appear consistently in the research literature on scholastic and career outcomes. Variables such as socioeconomic status, family role expectations, ability, achievement motivation, and gender-related personality differences are examples of factors that are commonly associated with achievement outcomes. In addition, measures such as intellectual self-esteem and labor force participation plans were chosen in response to themes from the valedictorian interview data.

A short questionnaire in 1988 collected current information about career and educational experiences, marriage, and childrearing. The self-report questionnaire also asked Project members to state the "ultimate" for them, a question repeated in each interview over the ten-year study period.

Discriminant Analyses

As described in the text, discriminant function analyses were conducted in the fifth year of the study to determine the career-related differences among the study women (Arnold, 1987). Analyses relied on both qualitative and quantitative data. First, women were classified into two vocational groups according to a broad definition of vocational achievement that included aspiration level, work participation plans, 1986 career or educational status, and family/work role expectations. This classification was initially carried out independently by three raters who had worked with the study group for a minimum of three years. Quantitative measures of the classification criteria were then used in discriminant function analysis to determine the appropriateness of the group assignments and to understand more about the combination of variables that maximally differentiated the groups. In addition to drawing from interview data to assign women to groups, raters used a set of specified achievement criteria. These criteria included: level of highest planned degree or professional position, clarity of career goals, choice of a male-dominated profession, degree of anticipated labor force participation, relative importance of future work and family roles, and degree to which occupation is chosen to maximize career/family manageability. Two vocational groups resulted: an A group of 22 high achievers and a B group of 24 women who planned to design their work lives around family considerations. The analysis method follows Terman's comparisons of an A and C vocational group representing the 100 most and the 100 least successful men in his longitudinal sample (Oden, 1968).

Discriminant function analyses were performed to obtain the linear combination of variables that maximally separated the vocational groups. The variables that were included in the discriminant function analysis were those that were theoretically important and those that had contributed to important bivariate relationships in the data set. ACT scores and socioeconomic ratings were included to investigate differences in ability and socioeconomic background. The function (pictured in Table 9) accounted for 69 percent of the variability due to groups and correctly predicted the *a priori* group membership of 94 percent of the study women. When men were included in a discriminant analysis with the same variables, only 68 percent were correctly classified into high and low vocational groups, which indicates that the variables that separated women so accurately fail to explain men's patterns.

A similar discriminant function analysis was conducted with the males in the Illinois Valedictorian Project based on the 1988 questionnaire information (Arnold, 1989). Three raters placed male valedictorians into two vocational groups based on their career and educational attainments and aspirations. The resulting discriminant function analysis correctly classified 94 percent of the 20 A group and 14 B group men (Table 10). The men, however, were separated by a different set of the variables than were A and B group women.

Table 9
Discriminant Analysis for Two Female Vocational Groups

A: High Vocational Aspiring Women (n=22)
B: Medium and Low Vocational Aspiring Women (n=24)

Function	Eigen Value	Percent Variance	Canonical Corr. Coeff	Wilk's Lamda	Chi-Square	Degrees of Freedom	Significance
1	2.251	100.00	.83	.308	43.62	14	.0001

Discriminant Function	
YRMARRY: Expected age at marriage	.32
KIDS: Likelihood of having children	-.09
YRKIDS: Expected age at first becoming a parent	.39
NBRKIDS: Number of children desired	-.13
TALENT: Desire to use best talents in career	.09
HELP: Desire to help others through career	.48
PEOPLE: Desire to work with people in career	-.49
SES: Socioeconomic status of family	.17
SMART85: Self-estimate of intelligence as college senior	.01
COLACT: Average ACT score of college attended	-.03
MOMED: Level of mother's education	.69
MOMOCC: Level of mother's occupation	.01
ACT: College entrance examination score	-.11
JOB: Professionally related employment during college	.52

Group Centroids	
Group A (2)	1.53
Group B (1)	-1.40

Predicted Group versus A Priori Group

		Predicted			
		A		B	
		No.	%	No.	%
A Priori	A	21	95.5	1	4.5
	B	2	8.3	22	91.7

Percent correctly classified: 93.48%

Table 10
Discriminant Analysis for Two Male Vocational Groups

A: High Vocational Aspiring Men (n=20)
B: Medium and Low Vocational Aspiring Men (n=14)

Function	Eigen Value	Percent Variance	Canonical Corr. Coeff	Wilk's Lamda	Chi-Square	Degrees of Freedom	Significance
1	2.558	100.00	.8479	.281	34.27	10	.0002

Discriminant Function	
SES: Socioeconomic status of family	.06
ACT: College entrance examination score	.61
COLACT: Average ACT score of college attended	.42
SMART85: Self-estimate of intelligence as college senior	.38
JOB: Professionally related employment during college	.73
WORK: Work motivation	-.02
MASTERY: Mastery motivation	.34
GOALS: Perceived ability to reach personal goals	.33
PRESTIGE: Desire for high prestige career	.62
TALENT: Desire to use best talents in career	.11

Group Centroids	
Group A (2)	1.29
Group B (1)	-1.85

		Predicted			
		A		B	
		No.	%	No.	%
A Priori	A	19	95	1	5
	B	1	7	13	93

Percent correctly classified: 94%

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Executive Summary

Academic Achievement—
A View from the Top
The Illinois Valedictorian Project

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Executive Summary

The Illinois Valedictorian Project has completed the first decade in a longitudinal study of high school valedictorians and salutatorians. The Project follows the academic and nonacademic lives of top high school academic achievers in order to understand academic success—its antecedents, prices, rewards, and relationship to career and personal life adaptation.

The Project began with the identification of 82 valedictorians and salutatorians who graduated in 1981 from public and private high schools throughout the state of Illinois. These high schools reflected the variety of geographic locations and types of communities in the state. The predominantly white group includes five African-American and three Hispanic students, as well as one Asian-American student. Researchers attended each of the graduation exercises of the participants. The valedictorians participated in four to five semi-structured interviews and completed questionnaires approximately every two years. Eighty-one people, 46 women and 35 men, remain active in the study ten years after receiving their high school honors.

Academic and Career Achievement After High School

Undergraduate All of the valedictorians attended college in the fall term following their May 1981 high school graduation. Most graduated in four years. The six students who have not completed undergraduate degrees left school for personal—rather than academic—reasons. Sixty percent of the students in the study group completed their undergraduate work in one of three fields: business, engineering, and science.

The study group excelled academically in college, earning a mean grade point average of 3.6 on a 4-point scale. As undergraduates, the high school valedictorians earned every conceivable scholastic honor. At least a dozen study members graduated Phi Beta Kappa, three were cited as the outstanding students in their graduating classes, and six received all As in college. Three-fourths of the study members received one or more academic honors during college.

Graduate The percentage of men and women in graduate school was relatively similar in 1988, with 20 percent of each group pursuing graduate degrees. By 1991, half of the women and a third of the men were completing or had earned graduate degrees. Most of these students entered doctoral programs, primarily in engineering, science, and humanities. Other valedictorians studied medicine, law, or business. The remainder of those pursuing post-college degrees earned masters degrees in academic disciplines or dropped out of graduate school (five students). Only one student of color completed a graduate degree, an African-American woman who earned an MBA. Only women have earned terminal masters degrees in doctoral degree granting fields. Doctoral and professional degrees also show some distinct gender patterns. Only women entered medical school. Men outnumbered women in law school. Female valedictorians pursued Ph.D. programs in a wider variety of fields than did male valedictorians.

Reflecting their college majors, more than half of the valedictorians were employed in science, math, engineering, and business careers in 1991. Project members are now attorneys, accountants, physicians, engineers, and physical therapists. Smaller numbers work in such fields as teaching, architecture, and nursing. Three women are rearing their children full-time. Ten valedictorians hold retail, clerical, or laborer positions not requiring a college degree. As a group, men's occupational levels were slightly higher than those of the women as measured by standard socioeconomic criteria of required education, salary, and occupational prestige (Hollingshead, 1957). Women were well represented at the highest career levels among the group, with half of the female participants working in traditionally male-dominated career fields such as law, medicine, science, engineering, accounting, and computer science. (Eighty percent of the men worked in male-dominated fields.) However, female valedictorians were disproportionately employed in clerical work and jobs that did not require college degrees. Only women were employed in the traditionally female fields of physical therapy and nursing, and only women worked full-time in the home.

Gender Differences

Female Valedictorians The story of the Illinois Valedictorian Project tells of gender differences in intellectual self-esteem and career aspirations for the former high school valedictorians. The first major gender difference emerged in the area of intellectual self-esteem. Although male and female participants received equally high college entrance examination scores and college grade point averages, women lowered their estimate of their intelligence over their college years.

A second gender difference was the persistent theme of women's concern about combining career and family. Many talented women perceived intensive career involvement to be incompatible with future family and childrearing roles. Attrition of women from math and science began early in the valedictorians' college careers and has continued through graduate school and even postdoctoral levels. As college seniors, two-thirds of the women—but none of the men—planned to reduce or interrupt their future labor force participation for family roles. Finally, women's professional expectations as college seniors were less defined than those of the men in the study group.

"School was where I was most valued for being most myself."

Female chemist, high school valedictorian

Two distinct vocational groups emerged among the female high academic achievers. The first included women who aspired to prestigious professions, valued their occupational roles highly, and expected relatively continuous labor force participation. The second group comprised women who aspired to relatively less prestigious vocational levels and who expected to design their work lives around future family responsibilities. Discriminant function analyses showed that women who aspired to high vocational levels were separated from less professionally ambitious women by work and family values, rather than by ability, family background, and college experiences. Valedictorian women's job values, mothers' education, planned timing of marriage and childbearing, and job experience effectively indicated their early professional levels.

Male Valedictorians In contrast to the findings on women, the early career attainments of male valedictorians consistently reflected their early work experience and desire for prestigious careers. The most vocationally successful men attended more selective colleges than did other male valedictorians, reported higher intellectual self-esteem, were more highly motivated to master tasks, and felt more optimistic about reaching their goals.

The men in the valedictorian study have not been as distinctly separated into vocational groups as have the women. A few men stood out as high achievers in graduate education and employment. Most of the male valedictorians, however, have worked at respectable but not extraordinarily high-level jobs.

"One thing that intrigued me at my high school was that such an incredibly disproportionate number of the top students were women at that age and yet the further I go along, at each stage, there seems to be fewer and fewer women. I've never understood why that should be and I've never understood where all those women went that were in classes with me in high school."

Male attorney, high school valedictorian

Another trend that emerges from the findings on the male valedictorians has been the early consistency of men's career choices. Most of the study males majored in technical areas. In this career-oriented, practical group, almost all of the men have worked in the fields of their college majors and followed the plans that they articulated in their first year beyond high school.

AHANA[1] Valedictorians

Black and Hispanic valedictorians have achieved lower levels of education than the study group as a whole. Virtually all of the minority valedictorians struggled with obstacles to their achievement in higher education related to financial disadvantage, lack of support and mentorship by faculty, and isolation within predominantly white universities. AHANA valedictorians have suffered professionally from uncertainty about how to negotiate careers, often choosing colleges, majors, and early professional positions based on starting salary, haphazard advice, and proximity to home.

The study's African-American and Hispanic participants share a number of personal qualities that have continued to motivate them. They each developed an identity as talented based on their early academic success. In addition to a common desire to use their talents and live up to their potential, the AHANA valedictorians have been exceptionally hard working students and employees. They consistently exhibited determination, persistence, and self-sufficiency.

Recommendations

The Valedictorian Project clearly supports educational interventions that assist academically talented students with planning and transitions between high school and college and between college and early careers. Specifically, the study suggests the following:

- High school and college administrators, faculty, and counselors should establish formal and informal mechanisms to help high achieving students choose colleges, majors, and careers.
- High school educators should assist AHANA and first-generation college students in seeking scholarships and other financial aid resources and conducting sophisticated college searches. Families should be included in the process.
- Academically talented students should be encouraged to explore a wide variety of college major and career options, including contact with practicing professionals in possible areas of concentration.
- Colleges and universities should actively communicate practical knowledge about careers. In

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[1] "AHANA" is an acronym that stands for African-American, Hispanic, Asian, and Native American. In use in several institutions of higher education for more than ten years, the term AHANA highlights the diversity among people of color and avoids the inaccurate and pejorative connotations of the term "minority."

order to ensure the transition from academic to career achievement, higher education institutions should develop structures and programs that expose talented students to undergraduate research, provide professional work experience, and establish faculty and student networks in academic disciplines.

- Higher education should address explicitly the process of multiple role planning as it affects the academic majors and career choices of gifted women.

Conclusion

About a quarter of the valedictorians are now at top professional levels for their age. The remaining participants are best characterized as young adults with solid but not outstanding career prospects. The valedictorians work at traditional jobs; very few are employed in creative or social activism fields. In general, the women's lives to this point have not been defined by their ability or their academic achievement, but by their values concerning work and family. As a group, study males do not appear to be heading for eminence, although they are achieving respectable career levels. African-American and Hispanic valedictorians as a group have not attained the same educational and professional levels as the Anglo study members, and even the consistently high-achieving members of the minority student group have struggled to overcome significant obstacles related to economics, racism, and lack of support in their educational and professional environments.

The first decade of the Illinois Valedictorian Project demonstrates a strong connection between top academic achievement in high school and similar achievement in college. The more fundamental question of the valedictorian study concerns the connection between school and life, academic performance and adult attainment. The decade since high school graduation indicates that scholastic performance is at best an indirect predictor of eminent career achievement. Early adult achievements of this group of high school valedictorians reflect the influences of gender, race, and social context rather than ability and academic performance.

Reference

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